

**RELATIONSHIP BETWEEN OPERATIONAL EFFICIENCY AND  
GROWTH OF COMMERCIAL BANKS IN KENYA**

**BY**

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**DECLARATION**

This research project report is my original work and has not been submitted for a degree in any other University.

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## DEDICATION

To all of you who made me what I am today

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I thank the Almighty God for the life. Thank you for being with me all through.

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## LIST OF ACRONYMS

BBK – Barclays Bank of Kenya Limited.

CBA – Commercial Bank of Africa Limited

DEA – Data Envelopment Analysis

GDP – Gross Domestic Product

KCB – Kenya Commercial Bank Limited.

NIM – Net Interest Margin

NPL – Non Performing Loans

ROA – Return on Assets

ROE – Return on Equity

SCB – Standard Bank of Kenya Limited.

SSA – Sub Saharan Africa

TFA – Thick Frontier Approach

## ABSTRACT

The research aims to examine whether the efficiency structure hypothesis holds true for Kenyan commercial banks. The efficiency structure hypothesis, developed by Demsetz (1973), is the proposition that more efficient companies will better compete, develop and grow in scale, thus resulting in an increase in the degree of market concentration. Hence, under this hypothesis, it is expected that the greater the degree of market concentration, the more efficient the market. This research design was descriptive research design with a quantitative approach in order to generate in-depth information from secondary data as obtained from central bank of Kenya.

The research was concentrated in the recent performance of commercial banks in Kenya between the periods of 1998 to 2007. The research consisted of 42 commercial banks operating in Kenya under licence by the Central Bank of Kenya. This study used accounting data of individual banks drawn from the years 1998 – 2007. The time period was selected considering that it offers recent time series observations and it constitutes a period of major changes for the Kenyan banking system. This study aimed to investigate the relationship between growth and operational efficiency as a performance measure of commercial banks in Kenya. Firstly, we derived the co-efficient efficiency of for each bank. Secondly, we estimated the annual percentage growth rate of earning assets for each bank. We finally tested the relationship between annual percentage growth rate and measure of operational efficiency as used in this study. Correlation coefficient  $r$ , was used to establish the association and strength of the relationship. Coefficient of determination  $R^2$ , told us how much of the variance in annual percentage growth rate of earning assets of each bank is explained by operational efficiency. Statistical t-tests were used to measure the significance of the correlation at 0.05 levels.

The study found that there was a fairly weak positive correlation between efficiency and growth of banks in Kenya. Efficiency of commercial banks explains only 9.4% of the variance in bank growth as measured by annual percentage rate of growth of earning assets. This implies that the more efficient commercial banks are, the more they grow in terms of their annual growth of earning assets. The results point to the fact that growth in commercial banks is significantly influenced by their efficiency in advances. The study recommends that banks in Kenya can be more effective in mobilising deposits when this is pursued with higher interest rates rather than depending on administrative devices alone, such as more branches and more personnel. The study also recommends that the strategies used by other efficient banks in deposit mobilisation are recommended to the other banks which wish to expand as rapidly as the more efficient ones.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background of the Study

The research aims to examine whether the efficiency structure hypothesis holds true for Kenyan commercial banks. The efficiency structure hypothesis, developed by Demesetz (1973), is the proposition that more efficient companies will better compete, develop and grow in scale, thus resulting in an increase in the degree of market concentration. Hence, under this hypothesis, it is expected that the greater the degree of market concentration, the more efficient the market. The hypothesis posits that the relationship between market structure and performance of any firm is defined by the efficiency of that firm. In cases where a firm is highly efficient relative to the competitors, the firm can maximize profit by maintaining its current size and pricing strategy or by reducing prices and expanding its operations. If the firm chooses to expand its operations, it will eventually gain market share and thus, concentration will be a consequence of efficiency. The efficiency hypothesis is defined by a number of other sub branches such as the relative market power hypothesis. The relative market power hypothesis argues that firm with large market shares and well differentiated products will be able to exercise market power when pricing their products and earn super normal profits. The efficient structure hypothesis states that only the efficiency of firms can explain the positive relationship between profits and concentration or profits and market share. The X-efficiency argument states that those firms with superior management or production technologies have lower costs and therefore higher profits. By extension, those more efficient firms will gain greater market shares, which may result in a more concentrated market. In this context, efficiency influences the level of profit and market structure. The efficiency hypothesis challenges the basic predictions of the scale efficiency paradigm. The scale efficiency argument contends that firms may have comparable quality of management and technology, but some firms produce at a more efficient scale than other firms, thus they have lower unit costs and higher unit profits. Such firms are assumed to acquire larger market shares, which may result in higher levels of concentration. In this scenario, efficiency through an indirect process drives both profit and market structure.

The Kenyan banking sector has continued to mature, expanding its asset base from Kshs. 548 billion in 1999 to Kshs 1.2 trillion in 2008, an increase of more than 120% within ten years. Competition is very stiff among banks. Over the past five years many banks have expanded their branch networks to reach more people, targeting the lower end of the market. The size

of banks has become an important issue. Because of the deregulation in the banking industry, there is a trend for banks to increase in size through addition of new branches or merging with others and become larger in size. During the last 3 years, banking in Kenya has been transformed from class banking to mass banking. In the next 2-5 years the growth process of the banking system is likely to continue the same way.

The cost of banking intermediation in Kenya is higher and bank penetration is far lower than in other markets. Kenya's banking industry must strengthen itself significantly if it has to support the modern and vibrant economy which Kenya aspires to be. The onus for this change lies mainly with bank managements. In their attempts to improve performance, retail banks do undertake substantial cost-reduction programs. Although such initiatives have brought measurable benefits, some institutions may get to a point where further cost cutting may weaken frontline sales capabilities and therefore hurt market share (Bennett, Brennan, & Buchar, 2006). As a result, the key differentiator between market leaders and poor performers will be growth, in particular, the generation of high-value, sustainable growth. The analysis carried out by World Bank (2008) shows that overhead costs of government-influenced banks remain high. High overhead costs and poor portfolio quality at state banks represent a large opportunity cost, as the deposits and other liabilities of those banks could be intermediated at lower costs and channelled to investments that are more productive.

The banking sector is currently facing a slowdown in economic growth. Kenya's economy is projected to grow by a dismal 2.5% in 2009. Almost all sectors of the economy are expected to decline. Agriculture, tourism and manufacturing are all expected to bear the brunt of the effects of dry weather, the post election crisis and the global recession. The decline in the real economy is expected to impact on the banking sector. This could only be felt later in the year. With the US government spending hundreds of billions of dollars bailing out some of the biggest banks on Wall Street, one of the lessons learnt from the global financial crisis is that there is no limit to the amount of capital that a bank should have. There is substantial uncertainty regarding the future impacts of the crisis, which is a major deterrent to investment, in turn a major driver of economic growth.

The issue of huge interest spreads continues to be a grave concern to many banks customers. Banks in Kenya are enjoying spreads as high as 16% between what they pay for deposits and what they charge for as interest on loans. It seems that this spread has not narrowed in spite

of the perceived competition in the banking sector. Banks rationalize these huge spreads by saying the cost of doing business has increased over time. In order to compete with non-bank, financial institutions, banks should be increasing their levels of efficiency.

Kenyan banks are presently under intense competition to improve efficiency and transform banking service delivery into networks encompassing traditional branches, automated tellers, telephone banking and the Internet. Banks must get a balance between in-sourcing and outsourcing and build effective relationships with suppliers. They must remain vigilant against financial crime, which can adversely affect the bottom line and their reputation in the market. Whilst doing all this they must continue to improve customer satisfaction which drives cost sales.

Small banks are coming under pressure as competitive pressures build up, especially as supply of treasury bills continues to dry up as source of revenue. In addition, the banks' reliance on government securities as a steady stream of revenues appears to have potentially crowded out the private sector. This has led to increased competition, as banks have had to identify new lending opportunities and expand their customer base in order to generate income. Addressing the corresponding high overhead costs is a major determinant of operational efficiency in Kenyan commercial banks.

Other issues affecting the banking industry in Kenya are changes in the regulatory framework, where liberalisation exists but the market still continues to be restrictive; declining interest margins due to customer pressure, leading to mergers and reorganisations; increased demand for non-traditional services including the automation of a large number of services and a move towards emphasis on the customer rather than the product; and introduction of non-traditional players, who now offer financial services products.

Greater efficiency is critical in the delivery of financial services to ensure that the costs of services become increasingly affordable and that the range and quality of services better caters to the needs of both savers and investing businesses and improved access to financial services and products for a much larger population of Kenyans. Growth sustainability of the Kenyan banking sector will require that the commercial banks should achieve stability in the retail banking sector to ensure that all banking institutions taking deposits safely handles the public's savings and ensure that the chances of financial crises are minimized.

It is therefore important to establish if the quantitative enlargement currently being experienced by Kenya Commercial banks is backed by bank's management operational efficiencies otherwise the growth sustainability cannot be assured.

## **1.2 Problem Statement**

The research aims to examine whether the efficiency structure hypothesis holds true for Kenyan commercial banks. The efficiency structure hypothesis, developed by Demesetz (1973), is the proposition that more efficient companies will better compete, develop and grow in scale, thus resulting in an increase in the degree of market concentration. Hence, under this hypothesis, it is expected that the greater the degree of market concentration, the more efficient the market.

Nearly four out of every ten Kenyan adults have no access even to a co-operative society. The situation is worse when you consider that only two out of every ten adults have a bank account, the others live out straight from the pocket. A weak banking structure has been unable to fuel continued growth, which has harmed the long-term health of their economies, (Irungu, 2007). In this research, the emphasis is in the need to act both decisively and quickly to build an enabling, rather than a limiting, banking sector in Kenya.

The future impact of the global financial crisis and post election violence on Kenyan financial system is still unclear particularly for Kenyan financial system. Kenya has not articulated a strong view on how to handle the crisis. Growth of the Kenyan banking sector will require a cautious approach to achieve stability. Competition is also likely to increase with the planned entry of fully fledged Islamic banks after the Minister for Finance opened a window for Sharia-compliant products in the budget speech for year 2007/08. It is not clear whether banks have come up with efficient ways of achieving profitable growth against a backdrop of rising customer expectations, reduced levels of consumer trust, unprecedented scrutiny from regulators and the media and intense competition.

To date, there have been limited published studies to explore the relationship between operational efficiency and growth, especially the commercial banks and more specifically in Kenya and that is reason this study proposes that there are measurable linkages between these two variables.

### **1.3 Research Objective**

The purpose of the study is to determine whether the current rapid growth rate of earning assets in Kenya Commercial banks is a result of an improved high operating efficiency.

### **1.4 Research Questions**

The following hypotheses will be tested in the study:

**H<sub>0</sub>:** There is no significant difference between banking operational efficiency and banking growth of commercial banks in Kenya.

**H<sub>1</sub>:** There is a significant difference between banking operational efficiency and banking growth of commercial banks in Kenya.

### **1.5 Significance of the Study**

- Given the fact that some programmes fail when they are adopted on a large scale even though they yield positive results during the testing phase, the study enlightens one on whether the recent growth in the banking sector is sustainable for long-term future.
- The research will highlight problems associated with empty growth in relation to operation efficiency. The findings might help bank managers to understand the underlying reasons for their banks' inefficient performances.
- The study is important and beneficial to various parties involved in the banking system, participants in policy making in a way that they come up with functional rules and policies which will enhance stability in the financial sector and reduce costs of operations. Further, elaborations are made to understand the market power of the sector.
- Academically, this study brings forth the importance of the banking industry in the economy and the need to enhance growth through better management of bank portfolios as this research tries to establish growth sustainability in banking industry.



## CHAPTER TWO - LITERATURE REVIEW

### 1. Introduction

In this chapter the process involves locating reading and evaluating reports of previous studies, observations and opinions related to the planned study. It is a continuous process in a dynamic way, the review helps to clarify, strengthen and direct each stage of the research from formulation of each topic to the mechanism for the dissemination and utilization of the research findings. The research will look at the performance of commercial banks and the ability to maintain positive growth by looking at global experiences then further trickling down to Kenyan market. Majorly to the best knowledge of the author, there is no research which has been done regarding to growth sustainability within commercial banks which has been carried out.

### 2. Banking Industry in Kenya

Kenya has experienced banking problems since 1986 culminating in major bank failures (37 failed banks as at 1998) following the crises of; 1986-1989, 1993/1994 and 1998. The number of banks absorbing their subsidiaries or merging has been experienced. In a banking crisis; depositors, lenders to banks and owners of bank capital all lose confidence and seek to simultaneously salvage their resources by withdrawing them (Irungu, 2007)

With the perspective experienced above, commercial banks in Kenya have been experiencing a positive growth. The Kenyan banking sector has 41 financial institutions, which are regulated by the Government of Kenya. These traditional banks are facing competition from non-traditional competitors; like microfinance institutions and SACCOs. In contrast to the traditional banks, there are over 3500 participants in the microfinance industry, not counting the SACCOS. Traditional banks like Barclays, KCB, and Standard Chartered have focused on higher end clients and have the highest market shares in the industry. In addition to this, Barclays and Standard Chartered are multinational banks and KCB has a huge network in Kenya. On the other hand, microfinance institutions like K-Rep and Equity Bank focus on lower income clients that were traditionally considered un-bankable. These banks have been growing tremendously over the past 3 years and have been taking over some of the market share of the traditional banks, (Dyer & Blair Bank, 2007).

The growth experienced by the sector drew attention to stakeholders in the field to refocus on how to avoid bank failures of crises, fierce competition from financial service providers would see some banks fail while as others would be forced to merge or takeover. In such case for example is when the government decided to increase the minimum statutory capital requirements for Kenyan banks to Sh1 billion by 2010 but Bill was shot down by parliament, the smaller banks could still shore up their capital base on their own initiative otherwise they would be outpaced in market penetration, technology advancement and market shocks. The banked population is still estimated at a paltry nine per cent or three million people. However the banking industry is currently at a high growth rate phase as evidenced by the increase in total assets held by banks from Sh330 billion in 1997 to Sh760 billion currently. Overall credit extension to the private sector has risen from just under Sh200 billion in 1997 to about Sh470 billion as at the close of last year (Irungu, 2007).

In her research, Okutoyi, P. G.(1988) came to the conclusion that the level, of strategic marketing in a bank affects the overall level of profitability., However, she discovered that the level of strategic marketing does not affect the level of deposits within the institutions. He attributes this to the role of government in the Kenyan money market.

Nyamai (1989) examines the growth in lending and deposits during the 1980s and the looks at the sectoral growths of each of these. He concludes that the big three banks, KCB, BBK and Standard Chartered controlled the largest percentage of the branch network. He also observed that branch banking was the most prevalent in the Kenyan financial system.

Several studies have been undertaken on evaluation of financial performance in Kenyan Banking sector, but none has focussed on the sustainability of growth in banks based on the impact the increase in earning assets has on operational efficiency. In his study Koros (2001) focussed on financial performance of non banking Institutions that converted into commercial banks in Kenya, Kitaka (2001) did a survey Of The use of Financial Performance Indicators By Micro Finance Institutions In Kenya. Thuku (2002) established the relationship between ownership structure and bank financial performance In Kenya. Kathanje (2000) made an evaluation of Financial Performance of the Kenyan Banking Sector. Muthungu (2003) also did an evaluation of Financial Performance Of Commercial Banks In Kenya

comparing local versus foreign banks. Kibe (2003) analysed the relationship between Interest Rate Spread and profitability Of Commercial Banks In Kenya and Kimutai (2003)

### **3. Banking Industry in Africa**

The banking industry in low-income SSA countries is generally not performing adequately. The range of institutions is narrow, and most of the countries' assets are smaller than those held by a single medium-sized bank in an industrial country. Most people do not have access to even basic payment services or savings accounts, and the largest part of the productive sector cannot obtain credit. Limited finance lowers welfare and hinders poverty alleviation, and a lack of credit to the economy impedes growth. In addition, implementing monetary policy in the context of shallow markets is costly and inefficient (Gulde & Pattillo, 2006).

According to Gulde & Pattillo (2006), the banking sector in Africa needs reforms so as to create effective financial sectors which can mobilize and pool savings; produce information on possible investments so that resources can be channelled to their most productive use; monitor the use of funds; facilitate the trading, diversification, and management of risk; and ease the exchange of goods and services. Because African countries are high-risk environment exposed to terms of trade shocks and a volatile climate, it would benefit from greater risk sharing through portfolio diversification, consumption smoothing, and insurance, which are facilitated by financial development.

Africa's banking systems have come a long way since the 1990s, when the region experienced a number of crises. At that time, politically motivated lending to public enterprises and political insiders, as well as non-committed supervisors, created the problem of rampant nonperforming loans, insolvent banking systems, and financial crises. Now, most of the region's banking systems are, on average, adequately capitalized and highly liquid. However, some countries' financial systems and many individual banks are still weak, with many banks failing to meet tests of basic capital adequacy, a sign of persistent problems in banking supervision, (International Monetary Fund, 2002).

The underperformance of the banking system in Africa can be attributed to a weak legal environment. Legal and institutional frameworks are generally poor in Sub-Saharan Africa, and improvements have been slow. Legal systems are underfunded, and the public often has

little confidence that legal proceedings are objective and will take a reasonable amount of time. A credit information index, measuring the ability of financial institutions to obtain information on client creditworthiness, and a legal framework index are lower for SSA than for other low-income countries. Studies have shown that improvements in these indices are strongly associated with higher shares of private loans to GDP (Kaminsky & Reinhart, 1999)

The other impediment to poor banking system in Africa is the weak property rights and poor contract enforceability. Financial institutions are reluctant to lend because of the difficulty of securing collateral and seizing assets if loans default. Borrowers often have difficulty presenting collateral because of unclear land titles as a result of inadequate documentation and overlapping systems of rights and ownership. Registering titles of movable property (such as cars and other durable goods) is also problematic. For example, when borrowers in Rwanda and Senegal use movable property as collateral, they must often physically surrender it for the duration of the loan (International Communications, 2007).

Supervision is constrained. In a big stride forward, SSA countries have brought many regulatory and supervisory requirements into line with international norms. Actual supervision, however, is often constrained. Supervisors tend to be subject to political pressure and thus have little power to demand "prompt corrective actions." They also tend to exhibit substantial discretion for tolerating violations of prudential rules. This forbearance often reflects underlying pressures, such as banks' inability to meet prudential requirements (for example, on loan concentration) given structural features of the economy (limited lending opportunities) that are slow to change. Politically influenced supervisors also sometimes worry about the possible fiscal costs of bank restructuring. Resource constraints in supervisory agencies and the generally weak accounting and auditing systems in place also hamper supervision (International Communications, 2007).

Rules-based monetary policy instruments impose costs on banks. Reserve ratios in SSA are high and have been climbing since the mid-1990s. In 2004, the average reserve ratio was 11.3 percent and ranged from 0 percent in the Central African Republic to about 50 percent in Zimbabwe. Increases in required reserves reflect the region's heightened focus on stabilizing inflation and maintaining financial system stability. With many SSA countries only partially remunerating required reserves, if at all, this instrument amounts to a heavy tax on banks.

Because of the lack of remuneration, banks do not have the incentive to seek deposits or to develop products against which they must hold reserves. And empirical studies find that high reserve requirements contribute to high interest rate spreads.

In the global picture, The Top 20 banks in Eastern Africa are smaller than those in West, North or South Africa, indicating that the financial sectors across mainland Eastern Africa are still relatively undeveloped. Of course, Eastern Africa does not boast the economic might of South Africa, or the oil and gas riches of West and North Africa, which may help to explain the lack of money washing around in the system. After many years of slow economic development, the economy has begun to pick up over the past two years and despite ongoing political instability and fears about financial irregularities, the country's economic prospects look better today than for any time in the past decade. Yet Kenyan banks are not managing to keep up with banks elsewhere on the continent(International Communications, 2007).

#### **4. Growth Sustainability in Banks**

The sustainable growth rate of a bank is the maximum annual rate of increase in total assets that can be supported by internally generated equity capital. This rate of growth is determined by the return on assets, the retention rate and the equity multiplier of the bank. Dimitrios Vasiliou and John Karkazis (2002)

One of the most frequent uses of a firm's financial forecasts is the assessment of the feasibility of its plans for growth. This assessment is necessary because most firms do not have unlimited access to external sources of funds. Therefore, a large part of the funds that are needed for the growth of a firm has to be generated internally. From the above it is apparent the significance of a firm's consistent and logical financial plan. Most of the firms grow either rapidly or slowly, depending upon the stage of their development. It is well known that the life-cycle of a firm is often portrayed as an S-shaped curve, which is divided in four stages of development. The first stage is called the experimentation period, where sales and profits grow slowly following the introduction of a new product. During this period of the firm's life-cycle, external financing is not an important source of meeting the firm's financing requirements. The second phase is called the exploitation period, where the firm experiences fast growth of sales and profits. At this stage the firm has an extraordinary need for outside financing. The third phase is called the maturity period, where the rate of growth

of sales begins to slow down. During this period the company changes from absorbing external financing to generating more cash than it can profitably reinvest. Finally, the fourth stage is called the decline period, where the firm faces the appearance of substitute products, technological obsolescence and decrease in the demand of its products. During this period, the company generates more cash than it can invest internally and the firm must look for investment opportunities in new products, or mergers with companies that are still in their exploitation period. Thus, the hypothesis represented by the four-stage life-cycle concept exhibit that the growth of a firm depends upon the stage of its development. Dimitrios Vasiliou and John Karkazis (2002)

The prevailing notion among bank executives is that the growth of a bank should be maximized. This perception is based upon the idea that a fast growth of a financial firm will increase its market share and ultimately its earnings. From the financial point of view, however, a fast growth is not always desirable. An increase in a bank's assets must be financed by some sources. Retained earnings and the ability of increasing borrowing that accompanies them, generate a rather limited amount of funding. If the bank cannot raise new equity, the previous constraint imposes a maximum boundary in the growth rate that the firm can accomplish without depleting its financial resources. In other words, the increase in a bank's net worth (due to the increase in the retained earnings) permits the proportional increase of liabilities, without altering the firm's financial structure. In consequence, the increase in the net worth and the liabilities determines the growth rate of its assets. Thus, the growth rate of a bank, which can be maintained from internal financial sources, depends upon the growth rate of its equity. From the above analysis it follows that the faster the growth rate of a bank the more equity capital it needs, even if it is profitable. If the increase in equity capital is ruled out for any reasons (e.g. for fear of loosing some measure of voting control), the need for funds can be met by an increase in the leverage employed by the bank. However, minimum capital-to-asset ratios imposed by regulators may restrict a bank's ability to increase leverage. This is the reason why a bank must know the maximum annual rate of increase in total assets that can be supported by internally generated equity capital. Dimitrios Vasiliou and John Karkazis (2002)

It is assumed that the sustainability of the banking industry can be composed of three stages of development namely. slow growth, rapid growth and diminishing returns. The first stage of

growth for a sustainable banking industry is characterised by Infrastructure, Intellectual Capital, Institutions, Integrity, Interaction and Innovation which are usually poorly defined. Investments in the inputs are low to result in significant development in the banking sector. The second stage is characterized by rapid growth in financial development, where superior products and services in the banking sector materialize. Improvements in the key drivers tend to increase the marginal contribution to the development and growth of the banking sector which is characterised by new innovation and new financial instruments which spur market growth. Lastly in the third stage, the banking sector achieves a high level of maturity and products and services become highly standardized and established in the market place. To this end, the banking industry reaches a steady state of financial development (Vaithilingm, Nair, & Samudram, 2004).

There is a great need for banks to monitor the performance of products and services and ensure business objectives are being met. The banks also need to analyze the value of individual customers in an effort to improve service and reduce churn with the view of improving asset and this through designing a system which deduct costs from raw profit figures and deliver the true value of a product or service. Through this, commercial banks can then undertake in-depth analysis based on a range of performance parameters. The availability of accurate profitability figures will enable commercial banks to keep existing and potential investors abreast of its performance, and assist in a planned market capitalisation. The bank owners are interested in minimisation of the own capital in order to increase the capital profitability and indexes of assets growth while institutions supervising the activity of banks require a greater part of the own capital with the purpose to reduce the risk of bankruptcy and provide the growing stability of banking system and the task of risk managers is to provide the conformity between the efficiency and growth in earning assets, the objective of the bank management is to satisfy all three categories of the interested parties (Scholtens, 2000).

## **5. Banks Operational Efficiency**

Efficiency measurement is one aspect of investigating a firm's performance. Efficiency can be measured in three ways; maximisation of output, minimisation of cost, and maximisation of profits. A firm is regarded as technically efficient if it is able to obtain maximum outputs

from given inputs or minimise inputs used in producing given outputs. The objective of producers here is to avoid waste (Kumbhakar and Lovell, 2003).

According to Koopmans (1951) “a producer is considered technically efficient if, and only if, it is impossible to produce more of any output without producing less of some other output or using more of some inputs.” On the other hand, allocative efficiency relates to the optimal combination of inputs and outputs at a given price. The objective of producers might entail the following: to produce given outputs at minimum costs; to utilise given inputs so as to maximise revenue; and to allocate inputs and outputs so as to maximise profit. This technique of production is widely known as economic efficiency where the objective of producers becomes one of attaining a high degree of economic efficiency (cost, revenue or profit efficiency).

### **5.1 Structure-Performance Conduct (SCP) and Efficiency Hypothesis**

The SCP paradigm is the most used framework for the analysis of the performance of the banking industry. While its theoretical foundations are well established in the industrial organization literature (Stigler, 1964; Scherer, 1989), its applicability to the banking firm has not always been rigorously justified. The SCP theory predicts that profits and output prices would be higher the greater the level of concentration in a given market. This is due to the greater ease of collusion in a more concentrated market. When applied to the banking industry it predicts that profits, interest rates on each type of loan and services charges would be higher in a more concentrated market. On the other hand deposit rates offered would vary inversely with concentration (Gilbert 1984).

The efficiency hypothesis challenges the basic predictions of the SCP paradigm. The efficiency hypothesis posits that the relationship between market structure and performance of any firm is defined by the efficiency of that firm. In cases where a firm is highly efficient relative to the competitors, the firm can maximize profit by maintaining its current size and pricing strategy or by reducing prices and expanding its operations. If the firm chooses to expand its operations, it will eventually gain market share and thus, concentration will be a consequence of efficiency. The efficiency hypothesis is defined by a number of sub branches such as the relative market power hypothesis and the efficient structure hypothesis.



The relative market power hypothesis argues that firm with large market shares and well differentiated products will be able to exercise market power when pricing their products and earn super normal profits. The efficient structure hypothesis states that only the efficiency of firms can explain the positive relationship between profits and concentration or profits and market share. The X-efficiency argument within this branch of literature states that those firms with superior management or production technologies have lower costs and therefore higher profits. By extension, those more efficient firms will gain greater market shares, which may result in a more concentrated market. In this context, efficiency influences the level of profit and market structure. The scale efficiency argument contends that firms may have comparable quality of management and technology, but some firms produce at a more efficient scale than other firms, thus they have lower unit costs and higher unit profits. Such firms are assumed to acquire larger market shares, which may result in higher levels of concentration. In this scenario, efficiency through an indirect process drives both profit and market structure.

Demsetz (1973) argues that a positive relationship between profit rates and concentration may reflect different levels of production efficiency among firms, rather than more effective collusion, or higher concentration in the market.

Berger (1991) applied the relative efficiency hypothesis to US banking sector data. The results indicated that once efficiency issues related to individual firms are accounted for, levels of bank cost inefficiency exert greater influence on bank performance than market concentration. In another application of the relative efficiency hypothesis, Berger (1993) found that mergers and the degree of market overlap were generally statistically insignificant in explaining bank performance.

Other researchers such as Gale and Branch (1982) have argued that the structure of an industry may be due to superior production efficiency of firms. This is because production efficiency allows firms to increase their market share, thus leading to higher market concentration. This suggests that it not collusion or mergers that lead to higher than normal profits, but rather economies of scale and scope.

Evanoff and Fortier (1988) argue that higher profits in concentrated markets could be the result of greater productive efficiency. The existence of a link between market structure and efficiency was first proposed by Hicks (1935) and the *quiet life hypothesis*.

Hicks (1935) argued that monopoly power allows managers a quiet life free from competition and therefore increased concentration should bring about a decrease in efficiency. Liebenstein (1966) argues that inefficiencies are reduced by increased competition as managers respond to the challenge. The *efficient structure hypothesis* (Demsetz, 1974) on the other hand, posits a reverse causality between competition and efficiency. According to the efficient structure hypothesis, more efficient firms have lower costs, which in turn lead to higher profits. Therefore, the most efficient firms are able to increase their market share, resulting in higher concentration. Firms may be exploiting greater Xefficiency (the so-called “efficiency hypothesis”) or greater scale efficiency (the so-called “scale efficiency hypothesis”). Given that higher market concentration lowers competition, according to the efficiency hypothesis there should be an inverse relationship between competition and efficiency, thus reversing the causality running from efficiency to competition in the SCP paradigm. Berger (1995) finds some evidence that the efficiency hypothesis holds in US banking. In Europe, on the other hand, structural factors appear to be more important and the SCP hypothesis seems to hold (Goddard et al., 2001).

## 5.2 Bank Mergers and Acquisitions

Several recent studies analyze bank mergers by looking at managerial efficiency (X-efficiency) and profit efficiency. An overall benefit of mergers is mixed. Shaffer (1993) find that mergers can potentially lower costs and increase profit efficiency, while another paper (Berger and Humphrey 1992) concludes that mergers have not resulted in any significant post merger improvements in efficiency.

Similarly, the corporate finance literature suggests that on average bank mergers and acquisitions do not offer improvements in either efficiency measures or better stock market returns. While evidence of efficiency gains within banks that have consolidated is not clear-cut, a number of analyses suggest that banking consolidation tends to increase customer welfare by improving lending rates and credit access for borrowers, as well as in the longer run – raising deposit rates (Grillo, 2005).

### **5.3 Bank Competition and Efficiency**

Theoretically, competition is good because it ensures that the costs of production are minimised and at the same time it promotes efficiency. Increased competition could force banks to operate more efficiently in order to survive. It forces the banks to produce products and provide services that are most demanded by the customers. If they can provide services demanded efficiently and with the least cost, there is no reason why they cannot make more profits. Otherwise, they will make losses and possibly go out of business (Nickell, 1996).

The non-structural approach, on the other hand, posits that factors other than market structure and concentration may affect competitive behaviour, such as entry/exit barriers and the general contestability of the market. Relatively new research warns that bank size and types may affect competitiveness differently and that using only one measure may not be sufficient for inferring on the true degree of competition (Berger et al., 2004).

The early bank efficiency literature shows that before deregulation banking markets were often characterized by the presence of many institutions operating at a non optimal scale with relatively high excess capacity. Such banks could survive mainly because of the lack of competitive pressures and the fact that, in some cases, the domestic authorities, while acting as protectors of their banking sectors, were keen on maintaining a large number of banks in their systems (Nickell, 1996).

A more static approach to competition suggests that banks operating in a concentrated market may be induced to use their market power to gain extra profits in an attempt to offset the inefficiencies derived by the lack of competitive pressures. Here the correlation between profitability and efficiency should be either zero or negative because less efficient banks with more market power will be able to gain extra profits. Banks typically encounter relatively large *scale diseconomies once they exceed a certain 'optimal' size* (Amel et al., 2004).

### **5.4 Bank Deregulation and Efficiency**

A few studies had been conducted to investigate the impact of bank deregulation on competition, efficiency and performance. The issues addressed were centred on whether deregulation had increased competition, improved efficiency and performance. There is a consensus view that deregulation had enhanced competition. But a mixed result was found on efficiency and performance. In the case of the US banking industry, for example, there was

evidence that deregulation did not change efficiency (Elyasiani and Mehdiian, 1995). A number of studies on Spanish banks also focused on efficiency and performance during the deregulation period. Among others are Grifell-Tatje and Lovell (1996, 1997), and Lozano (1997, 1998). The most important finding that is worth highlighting is that the efficiency and productivity of Spanish banks have not improved during the deregulated phase. Worse still, after the deregulation phase, the studies showed a reduced efficiency among Spanish savings banks (Khumbakar et al., 2001). The findings tend to suggest that the Spanish banks performed badly in terms of efficiency because the banks found it difficult to adjust themselves to the increased competition as a result of the deregulation.

A recent study by Isik and Hassan (2003) on Turkish banks also showed an increase in their efficiency. They attributed the increase in efficiency to improved resources management practices. In addition, the finding showed that the efficiency gaps between private banks and public banks have also been narrowed..

Bhattacharya et al. (1997) focused their study on the efficiency of three different kinds of ownership (private, public and foreign) of Indian commercial banks. Public-owned banks were found to be the most efficient but somehow demonstrated temporal decline in efficiency. This was followed by foreign banks, which had temporal increase in efficiency. Privately owned banks were the least efficient banks and the pattern did not significantly change over the 1986-1991 period.

## **6. Bank Growth and Bank Efficiency**

A more efficient bank which, presumably, earns more, relative to some measure of its assets or liabilities ought to have greater wherewithal for expansion and ought actually to grow faster than other banks. The manner in which this linkage, between efficiency and growth, occurs is as follows: When the banking system advances more credit, the less efficient banks that do not mobilise deposits at a rapid rate, will soon experience a decline in their cash ratios and liquidity ratios, and will be prevented from expansion as these ratios hit the prescribed minimum ratios. The more efficient banks will not hit this constraint and will consequently expand their earning assets further and faster. The annual percentage growth rate of individual banks must thus bear some relation with the co-efficient of efficiency of the banks, (Khusro, Raghavan, Khushi, Siddharthan, 1971).

## 7. Gap

Based on the above literature, we can say that there are some studies about banks' performance across the board, however, no in depth study has ever been done in Kenya on the relationship between growth and operational efficiency of commercial banks in Kenya. The researches mostly done have focused mainly why banks fail such as (Malyutina & Parilova, 1999) whom did a research on why banks go bankrupt after going through a transition period but they did not go further to discuss growth and its impact on operational efficiency. This paper improves on the existing literature both in terms of econometric technique and data. First, while (Levine, 2002) and (Kudinska, 2004) empirically assess the connection between banking sector development and the sources of economic growth, they do not explicitly confront the issue of banking sector growth and operational efficiency.

That is, findings of this study can add to the existing body of the literature and contribute to filling the gap, and can serve as a starting point on which future studies can be done. On the practical dimension, this study may help bank decision makers to focus on the major banking activities that may increase the bank ranking and financial performance positions comparing with other banks in terms of the sustenance in their growth both in customer base, branches and profitability. Such information should help the management of commercial banks in creating appropriate financial strategies for attaining the required planned financial performance and maintaining the current growth.

## **CHAPTER THREE - RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter describes the methodology that used as an aid to carrying out the research study. It describes specific strategies that will be used in data collection, analysis in order to answer research questions. It constitutes the blue print of the collection, measurement and analysis of data. It will provide answers for the research questions such as; What is the impact of rapid growth on a bank's operational efficiency and do banks with high efficiency results to a faster growth rate of earning assets?

### **3.2 Research Design**

The research design refers to a strategy to be used by the researcher in collection and analyzing data in order to answer the research questions. This research design will be descriptive research design with a quantitative approach in order to generate in-depth information from secondary data as obtained from central bank of Kenya. The advantage or the purpose of using descriptive research design in this study is to ensure the description of the state of affairs as it exists at present time.

### **3.3 Research Population**

The research is concentrated in the recent performance of commercial banks in Kenya between the periods of 2004 to 2008. The research consists of 42 commercial banks operating in Kenya under licence by the Central Bank of Kenya.

### **3.4 Sampling Design**

With 42 licensed banks in Kenya, the study takes considerations of the entire population. Commercial Banks in Kenya have been undergoing quantitative enlargement in the number of account holders (both deposit/ borrowing accounts) and in the number of rural and semi-urban branches. Most banks have been transformed from niche banking to mass banking.

### **3.5 Data Collection Methods**

This study uses accounting data of individual banks drawn from the years 2004 – 2008. In this study we use secondary data, in particular, income statement and balance sheet data of commercial banks obtained from the Central Bank of Kenya database. Aspects of the income statement and balance sheet to be used in the study include the banks' total deposits, total liabilities and interest payable. The time period was selected considering that it offers recent time series observations and it constitutes a period of major changes for the Kenyan banking system.

### **3.6 Data Analysis**

The data to be collected in the study will be quantitative and will later be summarized and analysed. The data will then be interpreted during which a description of results will be undertaken.

The model used in this study is built on the strength that a more efficient bank which, presumably, earns more, relative to some measure of its deposits or advances ought to have greater wherewithal for expansion and ought actually to grow faster than other banks. The manner in which this linkage, between efficiency and growth, occurs is as follows: When the banking system advances more credit, the less efficient banks that do not mobilise deposits at a rapid rate, will soon experience a decline in their cash ratios and liquidity ratios, and will be prevented from expansion as these ratios hit the prescribed minimum ratios. The more efficient banks will not hit this constraint and will consequently expand their earning assets further and faster. The annual percentage growth rate of individual banks must thus bear some relation with the co-efficient of efficiency of the banks.

This study aims to investigate the relationship between growth and operational efficiency as a performance measure of commercial banks in Kenya. Firstly, we derive the co-efficient efficiency of for each bank. Secondly, we estimate the annual percentage growth rate of earning assets for each bank. We will finally test the relationship between annual percentage growth rate and measure of operational efficiency as used in this study.

### **Measuring Efficiency**

While the system's deposits rise owing to an increase in the system's advances, how much an individual bank is able to increase its share in the system's additional deposits depends upon the efforts, the techniques, and the strategies, used by the bank.

The elasticity of a bank's deposits in relation to the banking system's advances change in a bank's deposits,  $D_i$ , resulting from a one per cent change in the banking system's advances,  $A$ , is used in this study as a fair measure, among others, of an individual bank's efficiency.

We thus have the relationship of the type:

$$\log D_i = \beta \log r_t + e_i \log A$$

Where:

$D_i$  = Change in bank's deposit

$A$  = Change in the banking system's advances

$r_t$  = Interest rate to be earned on deposits

$e_i$  = Co-efficient of efficiency

$\beta$  = Responsiveness of deposits to interest

Independent variables,  $r_t$  and  $A$  will be able to explain the behaviour of the dependent variable, bank deposits,  $D_i$ . All the co-efficients, judged by  $t$  value will be significant.

### Measuring Growth

The annual percentage growth rate of earning assets, of each bank has been estimated through the following equation:

$$g_i = \log E_i = \alpha_1 + g_1 T$$



Where;

$g_i$  = Annual percentage growth rate of earning assets of each bank

$E_i$  = Annual percentage growth rate of earning assets

$T$  = Time,

### Relation between Efficiency and Growth

In order to test the relationship between annual percentage growth rate and the coefficient of efficiency we use the regression:

$$g_i = \alpha_2 + \Phi e_i$$

Where;

$g_i$  = Annual percentage growth rate of earning assets of each bank

$e_i$  = Co-efficient of efficiency

Correlation coefficient  $r$ , will be used to establish the association and strength of the relationship.

Coefficient of determination  $R^2$ , will tell us how much of the variance in annual percentage growth rate of earning assets of each bank is explained by operational efficiency.

Statistical t-tests will be used to measure the significance of the correlation at 0.05 levels.

## CHAPTER FOUR : DATA ANALYSIS AND FINDINGS

### 4.1 Introduction

This chapter presents the results of data analysis. Data for 42 commercial banks was collected from Central Bank of Kenya and the Banking Survey (2009). The specific data collected regarded the assets, customer deposits, interest on deposits, and bank advances for the period beginning 1999-2008. It has been hypothesised that more efficient companies will better compete, develop and grow in scale, thus resulting in an increase in the degree of market concentration. To test for this hypothesis, a regression analysis was performed. The results of the relationship are shown in Table 1.

### 4.2 Efficiency of commercial banks in Kenya

The study found that Development Bank of Kenya was the most efficient bank with a coefficient of efficiency of +1.743. This was followed by Citibank, CFC, and Fidelity Commercial Bank. These results imply that a one-percent rise in systems advances leads to between 1.743 to 1.169 per cent rise in their deposits. This is in conformity with the previous studies that have found such a relationship.

Three commercial banks (7.1%) were found to be least efficient. In fact, these banks had negative coefficients of efficiency indicating that they were very inefficient. These banks, from Table 1, are Habib Bank, Consolidated Bank and National Bank of Kenya with coefficients of -0.044, -0.083, and - 0.115 respectively. This implies that a one per cent rise in systems advances leads to between 0.044 and 0.115 per cent fall in their deposits. The deposits for such banks are thus not positively responsive to the changes in systems advances.

In terms of annual percentage growth in earning assets, the study found that Equity Bank led with a rate of 80.9% followed by Chase Bank (34.5%), K-Rep (30.1) and Guardian Bank (25.9). These results can be observed from Table 1. This implies that these commercial banks have had a larger positive growth rate in their earning assets over the years. Surprisingly, it was not obvious that the banks that had the largest growth rates were the most efficient ones. A case in point is the Development Bank of Kenya which was rated as having the best system advances in terms of its high coefficient of efficiency but had an average annual growth rate of -0.0255.

Further, 9 commercial banks (or 21.4%) were found to have a negative annual percentage growth in their earning assets. These are shown in Table 1 as Oriental Commercial Bank, City Finance Bank, Development Bank of Kenya, Kenya Commercial Bank, HFCK, Victoria Commercial Bank, Trans-National Bank, Middle East Bank and National Bank of Kenya in that order. Their growth rates ranged from -0.1% to -11.7%. The implication here is that these banks have not been growing in terms of their earning assets.

**Table 1: Efficiency and Growth of Commercial Banks in Kenya (1999-2008)**

	$r_t$	$A$	$R^2$	$g$
Development Bank of Kenya	-1.759 (-2.224)	1.743 (2.17)	0.417	-0.02557
Citibank	-0.111 (-1.903)	1.249 (8.059)	0.934	0.232517
CFC	-0.19 (-2.238)	1.17 (11.904)	0.981	0.197627
Fidelity Commercial Bank	-0.019 (-3.000)	1.169 (13.278)	0.982	0.118709
Imperial Bank	-0.202 (-1.481)	1.162 (11.802)	0.967	0.130154
Chase bank	0.083 (0.644)	1.136 (11.571)	0.971	0.345365
K-Rep	0.019 (0.041)	1.106 (17.3)	0.984	0.30193
Trans-National Bank	-0.137 (-1.41)	1.08 (3.34)	0.622	-0.02068
Cooperative Bank of Kenya	-0.144 (-2.527)	1.073 (9.105)	0.981	0.099066
NIC Bank	-0.106 (-1.1551)	1.038 (13.363)	0.971	0.092466
Prime Bank	-0.5 (-4.319)	1.023 (7.356)	0.969	0.191044
Southern Credit Bank	-0.505 (-2.192)	0.991 (2.154)	0.912	0.094823
Equity Bank	0.202 (1.166)	0.962 (22.95)	1	0.809839
Ecobank	-0.358 (-1.972)	0.954 (7.531)	0.96	0.101442
Victoria Commercial Bank	-0.183 (-3.656)	0.905 (4.764)	0.797	-0.02156
Paramount Universal Bank	0.033 (0.135)	0.885 (3.648)	0.86	0.189681
I&M	-0.414	0.847	0.944	0.117818

	(-3.585)	(6.825)		
Diamond Trust	0.055	0.827	0.978	0.041355
	(0.919)	(16.584)		
Bank of India	-0.459	0.797	0.945	0.07991
	(-0.4183)	(9.275)		
CBA	-0.257	0.789	0.943	0.089424
	(-4.099)	(9.085)		
Bank of Africa	0.006	0.772	0.501	0.071149
	(0.064)	(2.612)		
Bank of Baroda	-0.601	0.77	0.901	0.147862
	(-2.906)	(5.796)		
Dubai Bank	0.103	0.722	0.843	0.180477
	(0.982)	(5.004)		
Barclays	-0.012	0.72	0.939	0.045933
	(-0.239)	(7.188)		
Fina Bank	-0.233	0.678	0.979	0.080709
	(-7.065)	(9.224)		
KCB	-0.179	0.676	0.876	-0.02466
	(-6.167)	(4.518)		
Equatorial Commercial Bank	-0.16	0.669	0.761	0.047991
	(-1.373)	(2.588)		
ABC	-0.187	0.665	0.952	0.067117
	(-3.993)	(0.6904)		
Giro Commercial Bank	-0.204	0.652	0.832	0.020756
	(-2.908)	(1.331)		
Stanbic Bank	-0.195	0.615	0.808	0.092024
	(-2.212)	(3.562)		
Credit Bank	-0.2	0.511	0.838	0.065877
	(-1.723)	(3.08)		
Standard Chartered Bank	-0.215	0.456	0.683	0.118371
	(-2.398)	(2.485)		
Habib AG Zurich	-0.252	0.418	0.743	0.140091
	(-2.246)	(1.558)		
HFCK	0.162	0.254	0.729	-0.02422
	(3.688)	(1.471)		
Prime Capital and Credit Bank	-0.368	0.23	0.746	0.125071
	(-2.936)	(1.08)		
Oriental Commercial Bank	0.786	0.227	0.894	-0.11742
	(5.139)	(0.797)		
Guardian Bank	-0.491	0.188	0.605	0.259552
	(-2.526)	(0.668)		
Habib Bank Ltd	-0.111	-0.044	0.586	0.046748
	(-3.067)	(-0.191)		
Consolidated Bank	-0.502	-0.083	0.89	0.066125
	(-6.143)	(-0.911)		
National Bank of Kenya	-0.176	-0.115	0.304	-0.00103
	(-1.602)	(-0.561)		

Middle East Bank	-0.582 (-4.831)	-1.612 (-1.817)	0.793	-0.00671
City Finance Bank	-0.611 (-2.55)	-1.619 (-4.64)	0.944	-0.04724

Note: Figures in parentheses denote 't' values of the coefficients. The significance is tested at 0.05 level. All tests are one-tailed.

### 4.3 Relationship between efficiency and growth

It had been hypothesised that unless the coefficient of efficiency does not truly measure efficiency, the annual percentage growth rate of individual banks must bear some relation with the coefficient of efficiency of banks. In order to test this relationship, a regression analysis was run with *growth* as the dependent variable and *coefficient of efficiency, e* as the independent variable. This was done cross-sectionally for all the 42 commercial banks in Kenya.

The results shown in Table 2 indicate that there was a fairly weak positive correlation of 0.307. From the R<sup>2</sup>, it can be concluded that efficiency of commercial banks explain only 9.4% of the variance in bank growth as measured by annual percentage rate of growth of earning assets.

**Table 2: Regression statistics**

R	R Square	Adjusted R Square	Std. Error of the Estimate
.307	.094	.072	.1406983

From the ANOVA table in Table 3, it is clear that the relationship above is statistically significant as measured by the significance of the F-statistic (F = 4.165, p>0.048).

**Table 3: ANOVA**

	Sum of Squares	df	Mean Square	F	Sig.
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Regression	.082	1	.082	4.165	.048
Residual	.792	40	.020		
Total	.874	41			

In terms of the contribution of *E* in the model, the study found from the t-statistic that it was significant in the model.

**Table 4: Regression Coefficients**

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	.063	.031		2.048	.047
E	.070	.034	.307	2.041	.048

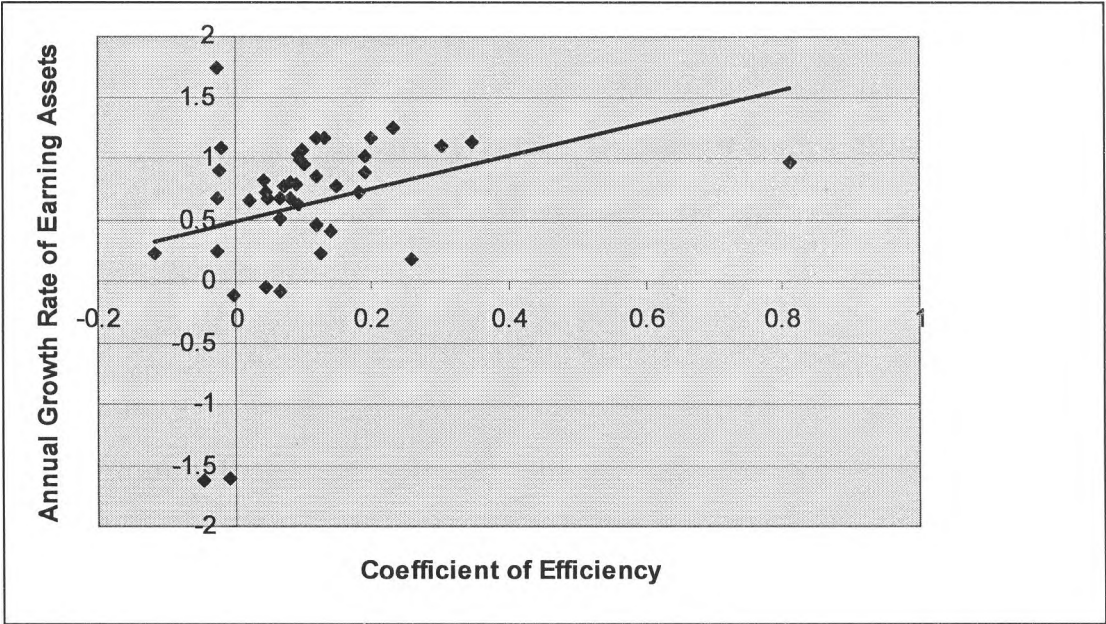
Thus, cross-sectionally for all the 42 commercial banks, the results are:

$$g_i = 0.063 + 0.070 e_i$$

$$\text{where } R = 0.307$$

This relationship is also seen in the scatter diagram in Chart 1 below. As shown, there is a tendency of banks with higher annual growth rates having higher coefficients of efficiency. This implies that the more efficient commercial banks are, the more they grow in terms of their annual growth of earning assets. This confirms the previous researches that have deduced this link.

Chart 1: Relative Efficiency of Commercial Banks



## Chapter 5: Summary, Conclusions and Recommendations

### 5.1 Introduction

The chapter presents a summary of results in chapter four. Further, conclusions of the study are presented. The study then offers recommendations for policy and research.

### 5.2 Summary

The study found that Development Bank of Kenya was the most efficient bank (+1.743) followed by Citibank, CFC, and Fidelity Commercial Bank. These imply that a one-percent rise in systems advances leads to per cent rise in their deposits. This is in conformity with the previous studies that have found such a relationship. The study found that 7.1% of the banks had negative coefficients of efficiency. These banks are Habib Bank, Consolidated Bank and National Bank of Kenya. The implication here is that a one per cent rise in systems advances leads to between 0.044 and 0.115 per cent fall in their deposits.

The study further found that in terms of bank growth, Equity Bank led with a rate of 80.9% followed by Chase Bank (34.5%), K-Rep (30.1) and Guardian Bank (25.9). It was not obvious that the banks that had the largest growth rates were the most efficient ones. For instance, Development Bank of Kenya, which was rated as having the best system advances in terms of its high coefficient of efficiency, had an average annual growth rate of -0.0255.

Further, 21.4% of commercial banks were found to have a negative annual percentage growth in their earning assets. These are Oriental Commercial Bank, City Finance Bank, Development Bank of Kenya, Kenya Commercial Bank, HFCK, Victoria Commercial Bank, Trans-National Bank, Middle East Bank and National Bank of Kenya in that order. Their growth rates ranged from -0.1% to -11.7%.



The results also indicate that there was a fairly weak positive correlation between efficiency and growth of banks in Kenya. Efficiency of commercial banks explains only 9.4% of the variance in bank growth as measured by annual percentage rate of growth of earning assets. The study found the relationship to be statistically significant as measured by the significance of the F-statistic ( $F = 4.165$ ,  $p > 0.048$ ). This relationship is also seen in the scatter diagram where it is seen that there is a tendency of banks with higher annual growth rates having higher coefficients of efficiency. This implies that the more efficient commercial banks are, the more they grow in terms of their annual growth of earning assets.

### 5.3 Conclusions

The study sought to establish the link between banking efficiency and banking growth. The link was to be established for all the 42 commercial banks currently operating in Kenya.

As the study found out, there was a significant positive correlation between banking efficiency and growth as measured by their annual percentage growth in earning assets. In as much as the relationship was not very strong ( $R = 0.307$ ), the results point to the fact that growth in commercial banks is significantly influenced by their efficiency in advances.

For most of the commercial banks, the study also found a positive correlation between efficiency advances and deposits. As such, it can be concluded that the more efficient banks in mobilising deposits usually see a rise in their cash ratios and liquidity ratios. This enables them to expand their earning assets faster and further.

#### **5.4 Recommendations**

The study makes the following recommendations. First, banks in Kenya can be more effective in mobilising deposits when this is pursued with higher interest rates rather than depending on administrative devices alone, such as more branches and more personnel.

Secondly, the strategies used by other efficient banks in deposit mobilisation are recommended to the other banks which wish to expand as rapidly as the more efficient ones.

#### **5.5 Areas for further research**

This study used a 10 year period to establish the link between banking efficiency and growth of commercial banks. A longer period should be considered to smoothen out the effects of business cycles.

Further, a study should be done targeting those banks that were owned by the government but are now public so as to establish whether the change in efficiency of their operations has had a significant influence on their growth.

This study used the elasticity of bank deposits in relation to the banking system's advances as a measure of an individual bank's efficiency. This study can be replicated in the future by focusing on other methods of measuring efficiency or using multiple methods to establish the link.

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## Appendix 1: Bank Deposits

Bank name	2008	2007	2006
ABC	5084	4081	4289
Bank of Africa	5523	4936	4123
Bank of Baroda	12673	10122	8079
Bank of India	8608	7146	5614
Barclays	109097	93837	81800
CFC	20098	17928	14794
Chase bank	4276	3235	1663
Citibank	29605	25331	22697
City Finance Bank	231	126	94
CBA	34845	32517	25088
Consolidated Bank	2851	2463	1950
Cooperative Bank of Kenya	54775	48183	43354
Credit Bank	2657	1960	2033
Development Bank of Kenya	1591	1317	719
Diamond Trust	29103	16726	13279
Dubai Bank	1000	801	710
Ecobank	7551	7011	6757
Equitorial Commercial Bank	4117	3281	3008
Equity Bank	31536	16337	8798
Fidelity Commercial Bank	2749	1977	1384
Fina Bank	9213	7947	6856
Giro Commercial Bank	4915	4493	4353
Guardian Bank	4544	3995	3453
Habib AG Zurich	5012	4347	4026
Habib Bank Ltd	2730	2433	2344
HFCK	8777	7619	8434



# APPENDICES

2005	2004	2003	2002	2001	2000	1999
3463	3230	2909	2400	2358	2154	2154
3195	3517	2865	3822	4258	2722	2722
7168	7050	4465	3324	2829	2448	2448
4789	4755	3774	2602	1990	2221	2221
80449	77390	69023	56788	53134	50164	50164
12673	9868	6703	5556	5004	2365	2365
1229	1031	687	574	481	290	290
19513	19982	21893	20805	16926	8016	8016
74	73	52	32	17	0	0
17619	15098	13908	13494	10200	8575	8575
1968	1617	1944	1752	1065	817	817
35151	25814	20828	17220	17627	12282	12282
2131	1606	1210	1090	1308	1222	1222
434	579	575	949	409	528	528
8832	6528	4564	3889	3672	5137	5137
477	401	409	491	306	0	0
3060	2970	2679	2216	1769	0	0
2163	2400	1942	1849	1797	1533	1533
5031	0	0	0	0	0	0
1266	961	897	881	1042	625	625
6942	5104	4565	4037	4064	3674	3674
4180	3761	3554	3656	3587	2727	2727
3176	3246	3211	2888	3306	1719	1719
3788	3397	3144	2957	2601	1585	1585
2767	2908	2597	2438	2298	2168	2168
8062	9419	9002	10258	11151	10208	10208

<b>I&amp;M</b>	23626	18220	14799	11635
<b>Imperial Bank</b>	8588	7074	5687	4401
<b>KCB</b>	94392	77193	64217	55894
<b>K-Rep</b>	4484	3308	1960	1370
<b>Middle East Bank</b>	1904	2338	2945	3010
<b>National Bank of Kenya</b>	34722	29517	25326	23721
<b>NIC Bank</b>	24806	21978	16575	12504
<b>Oriental Commercial Bank</b>	823	733	537	638
<b>Paramount Universal Bank</b>	1875	1745	1163	1012
<b>Prime Bank</b>	10358	8289	5799	4662
<b>Prime Capital and Credit Bank</b>	2124	2209	1946	1845
<b>Southern Credit Bank</b>	4322	3741	3615	3196
<b>Stanbic Bank</b>	22692	19760	12016	8085
<b>Standard Chartered Bank</b>	73841	64879	59683	56585
<b>Trans-National Bank</b>	1800	1264	901	1196
<b>Victoria Commercial Bank</b>	3430	3654	3585	3057

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10142	5364	5203	4761	2888	2888
3868	3362	2938	2372	1565	1565
50613	46122	46842	48814	46594	46594
1179	821	409	267	0	0
24111	2531	3020	3039	3136	3136
20800	15398	17402	15780	17754	17754
7951	6493	5600	4703	5095	5095
483	247	1982	3312	3271	3271
902	964	1032	1155	461	461
4166	2769	2110	1852	956	956
1984	1891	1500	1634	1160	1160
2720	2091	1636	438	1228	1228
8353	6135	5526	5836	5026	5026
53773	51509	45059	39311	30799	30799
523	787	715	790	1064	1064
2588	2173	2446	2754	2754	2754

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## Appendix 2: Bank Advances

Bank name	2008	2007	2006	2005
ABC	3597	3031	2731	2131
Bank of Africa	4951	4069	3245	3121
Bank of Baroda	7131	4554	3797	2797
Bank of India	3641	3319	2371	1609
Barclays	107953	78411	69619	67750
CFC	18002	15752	12053	11229
Chase bank	3387	2072	1739	1294
Citibank	12967	12644	10920	9814
City Finance Bank	273	316	366	334
CBA	18246	15205	12438	5684
Consolidated Bank	3154	2714	2978	1572
Cooperative Bank of Kenya	45300	43895	44548	33024
Credit Bank	1753	1585	1867	1396
Development Bank of Kenya	2573	1802	1380	826
Diamond Trust	23542	14225	10685	7425
Dubai Bank	1284	1083	1057	617
Ecobank	6676	5764	4773	2714
Equitorial Commercial Bank	2360	2492	1904	1823
Equity Bank	22251	11311	5834	3004
Fidelity Commercial Bank	2159	1545	1154	1175
Fina Bank	6741	5226	4371	3798
Giro Commercial Bank	3295	3181	3534	3274
Guardian Bank	4020	3579	3549	3181
Habib AG Zurich	1984	1335	1158	1082
Habib Bank Ltd	997	854	763	886
HFCK	9335	8695	10131	10834
I&M	19388	14853	11368	8468

2004	2003	2002	2001	2000	1999
1795	1644	1380	1641	1639	1662
3345	2142	2543	3132	3151	3035
1886	1533	1261	1342	1693	1567
1452	1081	852	714	1201	1288
60038	53336	47615	44519	39999	31110
8070	6332	5385	5445	3557	3665
937	684	477	390	336	302
8795	11554	12388	10103	6318	5117
347	484	601	630		
4631	5229	4894	5017	5177	4841
1590	1487	1061	2018	5226	10629
23250	22596	19424	19566	17691	15377
912	693	984	820	866	684
1171	1836	2195	3158	3914	3174
5238	3020	2310	1853	2763	3854
514	510	326	311	0	0
2723	3188	2379	1507	1429	1438
1537	1104	1002	1344	1454	1191
825	767	796	941	675	607
2854	2757	2869	2726	3051	2953
2981	2785	2925	2714	2716	2833
2776	2449	2717	3828	4017	1492
726	741	731	745	836	597
890	818	792	931	1108	909
11873	13355	12932	11570	10914	9423
5498	3519	3696	4028	4299	3779

<b>Imperial Bank</b>	7335	5708	4501	4089
<b>KCB</b>	72179	53376	45663	45218
<b>K-Rep</b>	5168	3768	2520	2107
<b>Middle East Bank</b>	1955	2089	1735	1701
<b>National Bank of Kenya</b>	12386	58717	54234	34627
<b>NIC Bank</b>	22878	17347	14871	12089
<b>Oriental Commercial Bank</b>	1011	953	1418	1355
<b>Paramount Universal Bank</b>	1707	1478	1726	864
<b>Prime Bank</b>	6602	5164	3591	2783
<b>Prime Capital and Credit Bank</b>	2185	2089	1493	1360
<b>Southern Credit Bank</b>	2668	2943	2439	2163
<b>Stanbic Bank</b>	19959	11564	8648	7080
<b>Standard Chartered Bank</b>	40775	37253	35118	27065
<b>Trans-National Bank</b>	1544	1606	1578	1053
<b>Victoria Commercial Bank</b>	2396	2181	1943	1926

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3171	2860	2601	2170	2046	1788
35901	38797	42203	51237	64757	60275
1568	1185	740	359		
1512	1316	1528	1631	1610	1459
31085	28592	41672	36965	34571	32067
7629	5389	4793	4790	5847	6178
1675	2173	2518	3200	3467	4817
873	825	786	961	472	376
2223	2033	1618	1586	1466	1388
1152	1263	1074	1385	1306	1013
1968	1668	1559	1114	1213	1224
4109	2923	3400	4354	6692	5874
19328	17048	15106	17975	20455	21628
841	1039	992	1088	1744	1469
1746	1416	1795	2001	2283	2371

### Appendix 3: Interest Rates

Bank name	2008	2007	2006	2005
ABC	3.42	3.77	3.15	2.14
Bank of Africa	3.42	3.36	2.98	0.66
Bank of Baroda	4.27	4.41	3.71	2.15
Bank of India	5.48	4.73	4.26	2.53
Barclays	1.64	1.37	1.00	0.46
CFC	4.75	4.11	4.75	2.33
Chase bank	4.49	3.62	3.43	2.60
Citibank	1.80	2.00	1.75	0.44
City Finance Bank	1.30	2.38	2.13	2.70
CBA	2.82	2.53	2.34	0.75
Consolidated Bank	1.30	1.34	1.59	1.98
Cooperative Bank of Kenya	1.62	2.08	3.14	1.13
Credit Bank	3.99	5.15	5.26	3.14
Development Bank of Kenya	7.17	5.32	5.15	3.00
Diamond Trust	4.65	5.03	4.53	1.94
Dubai Bank	1.60	1.62	1.27	0.42
Ecobank	4.89	5.36	3.11	3.99
Equitorial Commercial Bank	3.67	3.54	3.13	2.36
Equity Bank	0.78	0.72	0.93	1.15
Fidelity Commercial Bank	5.71	5.97	6.94	4.34
Fina Bank	4.23	3.88	4.26	2.43
Giro Commercial Bank	5.01	5.16	4.43	3.42
Guardian Bank	5.77	5.91	5.88	4.09
Habib AG Zurich	1.84	2.02	2.14	0.71
Habib Bank Ltd	2.16	2.42	2.52	1.01
HFCK	3.34	4.53	4.14	3.04



2004	2003	2002	2001	2000	1999
2.94	4.78	7.63	7.55	8.70	19.08
2.02	4.57	5.57	5.52	4.79	10.91
3.39	4.59	4.75	5.34	6.02	9.19
4.00	4.05	5.00	6.03	7.14	12.88
1.02	1.90	2.33	3.11	3.10	6.69
2.97	5.10	8.19	6.59	8.83	25.71
2.42	4.22	6.27	8.73	6.98	20.34
0.66	1.56	2.91	3.53	3.66	7.15
4.11	3.85	3.13	0.00		
1.34	3.19	4.04	4.75	5.11	11.13
2.41	3.50	4.00	4.79	8.81	11.14
1.94	4.39	6.68	7.77	9.22	15.20
3.99	6.86	9.36	8.56	10.90	18.58
3.63	6.09	4.74	12.47	12.83	10.23
2.04	4.16	6.51	8.47	9.12	20.32
1.75	4.40	4.48	2.29		
5.72	7.35	7.99	8.42		
2.88	5.82	7.52	8.51	10.60	20.74
5.62	9.70	10.33	10.17	12.96	27.36
4.88	7.43	9.66	10.97	13.20	25.01
4.79	7.12	8.89	9.84	16.74	26.04
4.62	5.82	7.69	9.26	10.61	18.09
1.83	3.94	5.17	6.04	6.00	15.71
2.20	4.62	6.03	6.92	6.50	9.23
4.20	6.84	8.89	10.23	10.51	15.34

<b>I&amp;M</b>	4.27	4.48	4.29
<b>Imperial Bank</b>	10.25	10.81	9.99
<b>KCB</b>	0.89	0.95	0.89
<b>K-Rep</b>	2.70	2.06	2.65
<b>Middle East Bank</b>	5.15	4.15	3.74
<b>National Bank of Kenya</b>	2.17	2.62	2.76
<b>NIC Bank</b>	4.42	3.99	4.31
<b>Oriental Commercial Bank</b>	3.89	3.27	3.35
<b>Paramount Universal Bank</b>	5.33	4.47	4.30
<b>Prime Bank</b>	4.45	4.36	4.33
<b>Prime Capital and Credit Bank</b>	6.92	6.97	7.76
<b>Southern Credit Bank</b>	5.18	5.88	5.39
<b>Stanbic Bank</b>	1.82	0.83	0.76
<b>Standard Chartered Bank</b>	1.89	2.26	1.57
<b>Trans-National Bank</b>	2.67	2.37	2.77
<b>Victoria Commercial Bank</b>	4.96	4.52	4.04

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2.12	2.82	5.44	7.05	7.98	10.21	23.82
9.59	9.00	9.19	9.39	10.67	12.58	27.86
0.67	1.63	3.46	4.72	7.66	9.45	17.66
2.19	2.37	2.07	2.69	2.62		
1.59	0.30	4.98	5.10	5.07	5.57	13.01
1.59	1.40	3.39	3.72	6.01	6.57	20.77
1.46	2.48	4.27	4.63	6.85	7.84	17.27
2.66	1.24	0.00	5.65	11.35	10.92	26.66
4.05	5.32	7.16	9.98	5.97	10.91	18.87
2.83	4.18	6.61	8.15	8.05	12.71	26.57
6.23	7.51	8.04	10.67	12.18	11.52	27.24
4.04	5.92	7.41	8.80	31.05	13.28	25.24
0.52	1.21	3.68	6.23	6.55	6.51	15.66
0.49	0.93	1.74	2.72	2.95	3.26	7.04
1.25	2.68	3.81	6.71	7.97	12.58	19.74
2.52	4.10	6.40	7.20	9.19	11.59	21.35

## Appendix 4: Earning Assets

Bank name	2008	2007	2006	2005
ABC	6143	5357	5140	4188
Bank of Africa	7657	6488	5373	4942
Bank of Baroda	14709	11773	9265	8335
Bank of India	10344	8702	7206	6039
Barclays	157665	117722	104522	110083
CFC	43263	40369	33095	29816
Chase bank	5754	4123	2613	2082
Citibank	47301	37794	30928	25108
City Finance Bank	744	527	511	543
CBA	42011	37438	29539	20189
Consolidated Bank	4109	3437	2916	2753
Cooperative Bank of Kenya	65709	58038	51830	46434
Credit Bank	3358	2610	2798	2708
Development Bank of Kenya	4678	3270	2718	2219
Diamond Trust	35998	21737	16384	11172
Dubai Bank	1544	1248	1153	920
Ecobank	9452	8910	8856	4210
Equitorial Commercial Bank	4879	3962	3671	2873
Equity Bank	53129	20024	11457	6707
Fidelity Commercial Bank	3234	2314	1667	1565
Fina Bank	11623	9785	8638	8386
Giro Commercial Bank	5611	5098	4926	4744
Guardian Bank	5540	4917	4451	4112
Habib AG Zurich	6206	5323	4743	4451
Habib Bank Ltd	3845	2963	2890	3378
HFCK	10369	9134	9861	10751
I&M	29420	22348	18046	14912

2004	2003	2002	2001	2000	1999
3818	3387	2961	2978	2813	2706
4797	4665	5771	5732	4624	4176
7998	4998	3827	3309	3083	2928
5805	4692	3131	2528	2551	2864
96914	85914	73647	70377	69292	70362
16430	11846	10412	9914	7607	6909
1704	1156	972	826	746	449
28333	30161	27710	22243	14786	11551
650	814	799	805		
18396	16418	16082	12783	11872	12081
2442	2707	2946	2501	2272	2120
32394	28675	23600	23588	24078	21518
2155	1795	1561	1710	1708	1555
2536	2610	3147	3635	3771	3593
8660	6274	5516	5155	5996	6609
783	751	820	571		
4168	3979	3268	2632	2633	2593
2941	2498	2283	2217	1961	2092
1227	1169	1229	1313	996	887
5805	5291	4642	4649	4389	4190
4254	4100	4116	4068	3745	3880
4066	4011	3626	4233	4419	2181
4020	3798	3514	3094	3118	2376
3562	3064	2910	2691	2885	2576
10765	10445	11714	13134	13061	12841
12130	7176	7100	6450	5962	5864

<b>Imperial Bank</b>	11723	9496	7773	5814
<b>KCB</b>	120480	92527	78315	69600
<b>K-Rep</b>	7039	5220	3800	2710
<b>Middle East Bank</b>	3097	3401	4051	3983
<b>National Bank of Kenya</b>	41414	36123	32584	30594
<b>NIC Bank</b>	31281	26062	20700	16643
<b>Oriental Commercial Bank</b>	1695	1449	1376	1630
<b>Paramount Universal Bank</b>	2367	2197	1494	1327
<b>Prime Bank</b>	13862	10452	7154	5703
<b>Prime Capital and Credit Bank</b>	4023	3835	2947	2704
<b>Southern Credit Bank</b>	5306	4598	4221	3822
<b>Stanbic Bank</b>	34469	25824	14994	11492
<b>Standard Chartered Bank</b>	91213	81014	72842	67114
<b>Trans-National Bank</b>	3221	2566	2035	2368
<b>Victoria Commercial Bank</b>	4131	4284	4212	3620

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4921	4181	3645	3014	2661	2584
60488	59689	64984	73328	75260	79033
2174	1674	1173	963		
3455	3918	4075	4143	4271	4100
25919	25231	24043	23960	25124	26541
10990	9329	8396	7442	7212	7343
2111	2245	2160	3623	4387	4271
1208	1262	1360	1462	757	673
5226	3763	3163	2752	2138	1958
2680	2426	2129	2495	2034	1658
3264	2645	2892	777	1583	1560
9931	8104	6503	7129	6930	6606
64111	61650	54277	49188	44056	37942
1475	1746	1588	1369	1374	1738
3336	3102	2760	3021	3527	3619

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