

**THE EFFECT OF COST EFFECIENCY ON FINANCIAL
PERFORMANCE OF COMPANIES LISTED ON NAIROBI
SECURITIES EXCHANGE**

BY

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DECLARATION

This research project report is my original work and has not been presented for academic purposes in the University of Nairobi or any other University.

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D61/64847/2013

This project report has been submitted with our approval as university supervisors

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DEDICATION

This project is dedicated to my Sister Marjory who encouraged me to begin the Master program and supported me both morally and financially throughout my period of study to attain a Master in Business Administration.

ABSTRACT

This study sought to investigate the effect of cost efficiency and financial performance of companies listed in the Nairobi Securities Exchange in Kenya. The 60 companies listed in the Nairobi Securities Exchange formed the population of the study. The sample consisted of 47 companies listed in the NSE who had published financial data is available continuously over the sample period of the study 2008 to 2013. The sample included firms in the following sectors, Agriculture, Automobile and accessories, Banking, Commercial & Services, Construction & Allied, energy and Petroleum, Insurance and Investment firms. The research adopted a descriptive survey design. The population of interest for this study was all the listed companies at NSE in Kenya. Thus it was a census survey. The study utilized secondary sources of data. In order to situate the study theoretically and generate the conceptual framework with which to work on the secondary sources was obtained from financial statements and NSE Handbooks of the companies for a 6 year-period (2008-2013) and publications were also used. The findings established that assets management measures demonstrate how efficient management uses a firm's assets to generate sales over a certain period of time. Asset management ratios show how efficiently and intensively assets are used to create Revenue efficiently and intensively. Efficiency has become an essential emphasis in today's highly competitive business environment. Efficiency measurement determines how companies provide an optimal combination of financial services with a set of inputs. From the findings, there was a fall in efficiency ratio from 2008 to 2013 in companies indicating that they were making considerably more than they were spending thus depicting a sound fiscal footing. The findings revealed a significant positive relationship between Return on Asset and Efficiency. In conclusion taking into consideration of the results provided, certain inputs are vital which impact on the level of cost efficiency of these companies. This implies steps towards efficiency of these companies include great consideration of their capital structure.

TABLE OF CONTENTS

DECLARATION	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
ABSTRACT	v
LIST OF TABLES	viii
LIST OF ABBREVIATIONS	ix
CHAPTER ONE: INTRODUCTION	10
1.1 Background of the Study.....	10
1.1.1 Cost Efficiency.....	14
1.1.2 Financial Performance.....	17
1.1.3 Relationship between Cost Efficiency and Financial Performance.....	19
1.1.4 Significance of Firms Listed at Nairobi Securities Exchange.....	21
1.2 Research Problem.....	22
1.3 Research Objective.....	24
1.4 Value of the Study.....	24
CHAPTER TWO: LITERATURE REVIEW	26
2.1 Introduction.....	26
2.2 Theoretical Review.....	26
2.2.1 Cost Management and Efficiency Theory.....	26
2.2.2 Theory of Constraints.....	29
2.2.3 Transaction Cost Economics Theory.....	30
2.4 Determinants of Financial Performance of Listed Firms.....	31
2.4.1 The Ownership Structure Performance Relation.....	31
2.4.2 The Debt-Performance Relation.....	32
2.4.3 The Ownership Structure Debt Relation.....	33
2.5 Review of Empirical Studies.....	34
2.6 Summary of the Literature Review.....	39
CHAPTER THREE: RESEARCH METHODOLOGY	41
3.1 Introduction.....	41
3.2 Research Design.....	41
3.3 Population.....	42

3.4 Sampling Design.....	42
3.5 Data Collection	43
3.6 Research Model	43
3.6.1 Ratio Analysis of Performance	43
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND PRESENTATION.....	45
4.1 Introduction	45
4.2 Descriptive Statistics	45
4.2.1 Annual Averages of the Companies Statistics	45
4.3 Correlation Analysis	47
4.4 Regression Analysis	48
4.4.1 Regression Equation	50
4.5 Summary and Interpretation of the Findings	50
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS... 54	
5.1 Summary.....	54
5.2 Conclusions	55
5.3 Policy Recommendations	56
5.4 Limitations of the Study	56
5.5 Suggestions for Further Research.....	57
REFERENCES.....	58
APPENDICES	62
Appendix I: List of Companies Quoted at NSE.....	62
Appendix II: Consolidated Firms Data (2008 -2013)	64
Appendix III: Data on Efficiency Ratio and Return on Assets	70

LIST OF TABLES

Table 4.1: Annual Averages	45
Table 4.2: Descriptive statistics for Return on Assets	46
Table 4.3: Descriptive statistics for Efficiency Ratio	46
Table 4.4: Pearson's Correlation Coefficient Matrix	47
Table 4.5: Anova.....	49

LIST OF ABBREVIATIONS

EBIT	-	Earnings before Interest and Tax
NSE	-	Nairobi Securities Exchange
CMA	-	Capital Market Authority
ASEA	-	African Stock Exchange Association
GDP	-	Gross Domestic Product
TOC	-	Theory of Constraints
TCE	-	Transaction Cost Economics
BPR	-	Business Process Re-engineering
ROA	-	Return on Assets
ROE	-	Return on Equity
DIE	-	Debt to Equity Ratio
DEA	-	Data Envelopment Analysis
SFA	-	Stochastic Frontier Analysis
TA	-	Total Assets

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Efficiency has become an essential emphasis in today's highly competitive business environment. Efficiency measurement determines how firms provide an optimal combination of inputs to generate viable outputs. The objective of this study was to examine relationship between cost efficiency and financial performance of firms quoted in NSE in Kenya. Companies need to be cost efficient in their operation for them to realize or attain the core objective of profit maximization. This should be attained through use of Quality Costing and Business process Re-engineering.

According to Guilding, (2000) quality costing includes analysis of the four categories of costs namely; prevention costs, appraisal costs, internal failure costs and external failure costs. Identification and control of the costs associated with the creation, identification, repair and prevention of defects. The target was to direct management attention to prioritize quality (in a broader sense also safety and environment) problems. Product quality has become a precondition to compete in the market. This technique classifies and monitors costs as deriving from quality prevention, appraisal, internal and external failures (Heagy, 1991). Prevention costs represent the cost of any action taken to prevent or reduce defects and failures. Examples include: customer surveys, research of customer needs, field trials, quality education and training programmes, supplier reviews, investment in improved production equipment and quality engineering.

Appraisal costs are the costs incurred, such as inspection and testing, in initially ascertaining the conformance of the product to quality requirements. Examples might be the capital cost of measurement equipment, inspection and testing, product quality audits, process control monitoring and Test equipment expense. Internal failure costs are the costs arising from inadequate quality where the problem is discovered before the transfer of ownership from supplier to purchaser. Examples include: rework or rectification costs, net cost of scrap, disposal of defective products, downtime or idle time due to quality problems (Drury Colin, 2004). External failure costs are the cost arising from inadequate quality discovered after the transfer of ownership from supplier to purchaser. Examples include: complaint investigation, processing warranty claims and cost of lost sales Product recalls (Drury Colin, 2004).

Conformance costs and non-conformance costs Appraisal and prevention costs may also be referred to as conformance costs, whilst internal and external failure costs may be referred to as non-conformance costs. This means that everyone in the value chain is involved in the process, including employees, customer and suppliers Quality products and services must meet the customers' requirements Management - quality is actively managed rather than controlled so that problems are prevented from occurring (Cooper & Slagmulder 1997).

Business process re-engineering (BPR) is a business management strategy, originally pioneered in the early 1990s, focusing on the analysis and design of workflows and processes within an organization. BPR aimed to help organizations fundamentally rethink how they do their work in order to dramatically improve customer service, cut operational costs, and become world-class competitors (Hammer & Stanton, 1995).

The primary objective of BPR is intended to boost competitiveness in the operations network through simpler, leaner and more productive processes. BPR helps companies to rethink the way they do business, and is a more radical approach to bringing about improvements. It has been applied in labour and capital intensive industries such as automobile production, telecommunications, and pharmaceuticals as well as in service sectors such as insurance and banking (Cooper & Slagmulder 1997).

A business process as defined by Hammer and Champy (1993) cited in Dubey and Bansal (2013) is, “a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer”. A business process has a goal and is affected by events occurring in the external world or in other processes. On the other hand business process re-engineering is a thorough rethinking and radical redesign of business processes, job definitions, management systems and organizational structures to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed.

Kapoor (2011) argued that BPR brings numerous benefits to organizations and companies in which it is implemented especially increasing organizational effectiveness and efficiency. As all employees are aware of the processes to which they belong, they have a greater sense of responsibility. All processes are completely monitored under the strict control of the management. The net result of this is that employees deliver high quality products to their customers. Besides, BPR helps to improve efficiency. Proper management and control of all business processes reduces the time lag between different processes, which otherwise is quite high causing

delays. This in turn reduces the time to market the product to the target customers and gives quicker response to buyers. BPR also help to reduces cost.

Kapoor (2011) states that with the proper management of processes, improved efficiency and quick delivery of products to the buyers, the overall product costs are reduced resulting in cost saving for the organization in the long run. On the other hand, BPR help create meaningful job for employees. As the time lag of product processing between different departments gets reduced due to the application of business process reengineering, there are more meaningful tasks to be performed by employees. This leads to increase their levels of motivation and the desire to perform well.

Another advantage of BPR is its ability to improve organizational approach to management. According to the traditional approach of managing an organization there is no flexibility or adaptability to change. The management formulated strict rules for employees of the organization. Whereas now, when most organizations have implemented business process reengineering there is an increase in flexibility and adaptability for change. This has created better environment for people to work, thus leading to employee satisfaction. Finally, BPR is instrumental for supporting growth of business. Implementation of BPR results in the growth of the present business thus enabling the emergence of new businesses within the same organization (Cooper & Slagmulder 1997).

1.1.1 Cost Efficiency

According to Drury (2004), Cost efficiency focuses on cost reduction and continuous improvement and change rather than cost containment. The term cost reduction could be used instead of cost efficiency. Whereas traditional cost control systems are routinely applied on a continuous basis, cost efficiency tends to be applied on an ad hoc basis when an opportunity for cost reduction is identified. Also many of the approaches that are incorporated within the area of cost efficiency do not necessarily involve the use of accounting techniques. In contrast, cost control relies heavily on accounting techniques. Cost efficiency consists of those actions that are taken by managers to reduce costs, some of which are prioritized on the basis of information extracted from the accounting system. Although cost efficiency seeks to reduce costs, it should not be at the expense of customer satisfaction. Ideally, the aim is to take actions that will both reduce costs and enhance customer satisfaction.

Cost efficiency has become an essential emphasis in today's highly competitive business environment. This study was aimed at defining cost efficiency and discussing the philosophies that underpins efficiency. Over the past 25 years, we have seen a significant shift in the cost accounting and management accounting (Maher and Deakin, 1994, Günther 1997 and Götze, 2004). This shift is the result of an increasing competitive environment due to the introduction of new manufacturing and information technologies, the focus on the customer, the growth of worldwide markets, and the introduction of new forms of management organization (Blocher et al, 1999).

Productivity and quality are the watchwords of today's business competitions. Companies are not only measuring productivity and insisting on improvements but also insisting that quality means to bring to market products that satisfy customers, improve sales and boosts profits. With greater competition the banking environment defined by cost, quality and time issues, there exists a prevalent conviction that conventional accounting based measures of organizational performance are outdated (Nixon, 1998). Hence, there are moves to adopt newer techniques due to greater needs to be more responsive to investor and customer needs. It is urged that the traditional approaches of the managerial accounting have limited evidence of technical development in response to the major changes in manufacturing technology. Management accounting was confined to financial reporting. Consequently, there was a need for developing a management accounting project oriented towards the strategic accounting rather than the management control process. The idea of cost efficiency of a production unit was first introduced by Farrell (1957), under the concept of "input oriented measure".

According to Farrell, a technical efficiency measure is defined by one minus the maximum equiproportionate reduction in all inputs that still allows continuous production of given outputs. Technical efficiency is linked to the possibility of avoiding wasting by producing as much outputs as the use of input allows it (output oriented measure), or by using as less as input that the production objective plans it (input oriented measure). This efficiency is measured by comparing observed and optimal values of production, costs, revenue, profit or all that the production system can follow as objective and which is under appropriate quantities and prices constraints. 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. In general, efficiency is divided into two components (Kumbhakar and Lovell, 2003).

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. 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). Theoretically, competition is good because it ensures that the costs of production are minimised and at the same time it promotes efficiency (Nickell, 1996). Increased competition could force firms 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.

1.1.2 Financial Performance

Pandey (2008) defines financial performance as a subjective measure of how well a firm uses assets from its primary mode of business to generate revenues. He further says that the term can also be used as a general measure of a firm's overall financial health position over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. Evaluating performance of firms is critical in order to ascertain whether the business is viable. A key performance measure used in modern financial management is the financial ratio analysis. The type of financial analysis varies according to the specific interests of the party involved.

According to Holtzman (1994) trade creditors are interested primarily in the liquidity of the firm. Their claims are short term, and the ability of the firm to pay these claims is best judged by means of a thorough analysis of its liquidity. The claims of bondholders on the other hand are long term. Accordingly, they are more interested in the cash flow ability of the firm to service debts in the long run. The bondholders may evaluate this ability by analyzing the capital structure of the firm, the major sources and uses of funds, the profitability over time and projections of future profitability. Investors in a Company's common stocks are concerned principally with present and expected future earnings and the stability of these earnings about a trend as well as their covariance with earnings of other Companies. As result, investors might concentrate their analysis on a company's profitability. They would be concerned with the financial condition insofar as it affects its ability to pay dividends and avoid bankruptcy. There are different ways of measuring financial performance, but all measures should be taken in aggregation.

Most growing businesses ultimately target increased profits which make it important to know how to measure profitability. The key standard measures of financial performance include: gross profit margin which measures how much money an organization has made after direct costs of sales have been taken into account; operating margin lies between the gross and net measures of profitability after overheads are taken into account before interest and tax payments known as the EBIT (earnings before interest and taxes) margin. Net profit margin is a much narrower measure of profits, as it takes all costs into account, not just direct ones. All overheads, as well as interest and tax payments, are included in the profit calculation.

According to Allen and Rai (1996), financial performance can be defined as a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. The performance measurement concept indicates that employees can increase the value of the firm by; increasing the size of a firm's future cash flows, by accelerating the receipt of those cash flows, or by making them more certain or less risky. There are many different ways to measure financial performance, but all measures should be taken in aggregation. Some of the indicators of financial performance are return on equity, liquidity ratios, asset management ratios, profitability ratios, leverage ratios and market value ratios.

1.1.3 Relationship between Cost Efficiency and Financial Performance

According to Padey, (2004) a firm may produce a relative high profit margin by adopting the efficiency management. Efficiency strategy helps firms to produce the standard, high-volume product or service at the most competitive price to customers, it also help to create higher financial performance for firms competing in the emerging economies, such as China, India etc, as firms can gain a relative advantage because of their lower costs in labor recourse and manufacture (Aulakh et. al, 2000).

Laitinen & Toppinen (2006) in their report, found out the cost-management indicators, statistically, explain better on the short-term financial performance, than value- added creation, which has an effect on long-term financial performance and turnover growth in the future. They conclude that, cost-efficiency is a prerequisite for the business, and the latest worldwide economic recession is just the best example to confirm the validity. Performance assessment of companies has been the subject of numerous studies, and several discussions in accounting and management have focused on the matter that which of the performance assessment criteria is more valid. Some people believe that there is no ideal criterion to measure the performance, but, by contrast, there are several assessment methods and each method has some major shortcomings. If such methods are applied to measure the performance and to determine the companies' value, they will not definitely be able to find out the real value of companies.

However, performance evaluation of companies is a necessity and it has to be done through using accepted criteria which consider different aspects of limitation on activities and the possibility of taking advantages of facilities (Healy, 1998)

Generally, the performance measurement criteria are divided into two groups: financial and non-financial criteria (Spigelman, 1994). Non-financial criteria include production, marketing, administrative, and social criteria while financial proportions are the examples of techniques proposed as financial criteria. Some financial researchers suggest applying combined (financial and non-financial) criteria. However, using such criteria is quite complicated due to the difficulty of determining the type of the criteria, the kind of their correlation, and the weight of each of the criteria (Bacidore et.al, 1997).

It is important to consider the approach and the purpose of performance assessment since different people and groups with different approaches and aims may assess companies' performance and use the results in making their own decisions. Assets' owners, managers, creditors, and public and governmental organizations are the examples of such groups. These people have different views both on the definition of performance assessment and on the performance results of profit units. For instance, managers notice the operation analysis, resources management, and making profits, assets' owners pay attention to the information on the profitability of commercial units, return on stock, and market reactions, and credit institutes consider the information about the liquidity and financial leverage of commercial units.

Moreover, performance evaluation of companies is a necessity and it has to be done through using accepted criteria which consider different aspects of limitation on activities and the possibility of taking advantages of facilities (Healy, 1998). Financial variables have been applied to measure the performance and efficiency of companies. Moreover, the relationship between the financial variables has been studied in order to

reach the results that can encourage managers to apply such concepts and criteria for representing a real and precise view of enterprises' performance.

1.1.4 Significance of Firms Listed at Nairobi Securities Exchange

As a capital market institution, the stock exchange plays an important role in the process of economic development. The NSE began in the early 1920's while Kenya was considered a colony under British control. It was an informal market place for local stocks and shares. By 1954, a true stock exchange was created when NSE was officially recognized by London Stock Exchange as an overseas stock exchange. NSE is licensed by Capital Market Authority (CMA) with its main obligation to regulate the security market and ensure trading of securities by bringing together borrowers and investors at low cost. Regulation of quoted firms is achieved by ensuring that firms stand by the rules and regulations set by providing their periodic performance reports. NSE also provides information to general public on investment matters. Instruments traded consist of shares and bonds.

The shares of fifty seven companies listed at the NSE trade are in four sectors namely; agriculture, commercial and services, finance and investment and industrial and allied while bonds traded consist of government and corporate bonds. Trading activities are conducted through stock brokers who meet on the floor of NSE and facilitate the exchange of shares and bonds through auctioning process. In 2006, live trading on the automated trading systems of the NSE was implemented, to keep pace with other major world stock exchanges (NSE, 2011). The NSE is part of the African Stock Exchanges Association. The ASEA was founded in the early 1990's to create a way for all the stock exchanges in Africa to communicate and stay organized. NSE is

Africa's fourth largest stock exchange in terms of trading volumes, and fifth in terms of market capitalization as a percentage of GDP.

1.2 Research Problem

Accounting information plays a vital role in determining the most appropriate strategic direction for the organization. It guides managerial actions, motivates behaviors, and supports and creates the cultural values necessary to achieve an organization's strategic objectives (Ansari et al, 1997). In particular, efficiency information (both financial and nonfinancial information) is a critical type of information to the success of the company. For this reason, the role of cost accounting and management has expanded. Accountants are now participants on multifunctional management teams. For this reason the role of cost accounting and management has expanded. Accountants are now participants on multifunctional management teams.

Employing efficiency initiatives on companies will more likely bring in a positive effect on companies financial performance by promoting aggressive cost reduction initiatives, developing and continuing sustainable efficiency programs and also it will help the management in understanding the short-term and long-term effects of cost reduction initiatives and efficiency programs. Efficiency is not only efficiency but also can increase revenues, improve productivity and customer satisfaction, and at the same time improve the strategic position of the company. The key concept that managers should view costs must be viewed by looking simultaneously at the value they provide, hence there will be a positive growth of the listed companies which will eventually lead to the achievement of an acceptable level of profitability and ultimately deliver attractive returns to shareholders. In addition, going forward,

companies practicing Efficiency will reduce costs across the functional areas including operations & informational technology, human resource, finance & accounting and procurement. Very few local studies have been done on this area.

Bisher, (2011) examined the relationship between size and financial performance of commercial banks in Kenya. The study recommended an incorporation of other performance factors, including efficiency to give a clearer picture on the effects of this key factor in addition to the factors considered in the study. Ongore (2013) examined determinants of Financial Performance of Commercial Banks in Kenya. The study utilized capital adequacy, asset quality, management efficiency and liquidity management. He recommended further studies that affect efficiency on the firm's performance. Nguny (2013) relationship between efficiency and financial performance of commercial banks in Kenya. The study results noted that efficient operation is a key component in managing banks in Kenya.

The research gap experienced is that the existing efficiency approaches only consider certain individual contributions and therefore focus on specific aspects of it with little relation to financial performance. Those that relate the efficiency approaches to financial performance do so but are only limited to either the previous year performances or to the performance to their competitors. Also, the efficiency approaches fail to realize the need to be updated to cope up with global orientations such as International Human Resources Management.

Furthermore, Palepu and Healy (2008) suggest that the whole process of cost efficiency should enable a company to develop competitive intelligence in order to predict the next moves in the industry. However, their study fails to realize that

competition remains as an ever increasing challenge that cannot be bottled but can only be sharpened. No company can ever experience ultimate competitive intelligence, only a glimpse. Likewise, they mention that diversified operations within a company will gear the company towards competitive greatness; however this conflicts with the laws of economic where significant impact of risk will wholly affect the financial performance of the business in this ever volatile economy. Therefore in this study the researcher aimed to establish the impacts of cost efficiency on the financial performance of firms quoted at Nairobi Securities Exchange. Therefore the question: “Does Cost Efficiency affect the financial performance of listed firms in Kenya?”

1.3 Research Objective

To examine relationship between cost efficiency and financial performance of firms quoted at Nairobi Securities Exchange in Kenya.

1.4 Value of the Study

The outcome of the research would be most beneficial to managers of Capital Market Authorities, NSE and not forgetting managers of various firms in various sectors. It would provide some perspective to see the how value of their decision and financial performance are related. To the researchers, this study would help to understand the concepts of cost efficiency on financial performance and develop a deep insight on how to apply to their responsibility area and also to get extensive approaches to the concept of cost efficiency. It also makes some statistical contribution to the previous studies or knowledge gaps. Academically, this study brings forth the importance of the listing of companies which enhance growth in the economy and the need to

enhance consistent growth through better management of portfolios as this research tries to establish growth sustainability. The findings might help Chief Executive Officers to understand the underlying reasons for their firm's inefficient performances. This study highlighted the importance of encouraging increased cost efficiency of quoted firms in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the review of the literature relevant to the purpose of the study. It starts with the theoretical framework, cost management and efficiency theory, theory of constraints and transaction cost economic theory have been focused. In addition, the chapter presents information on determinants of financial performance as well as the empirical review.

2.2 Theoretical Review

This section discusses the three theories; theory of constraints, cost management and efficiency theory and transaction economic theory as detailed below.

2.2.1 Cost Management and Efficiency Theory

Efficiency theory negate that managers plan and control expenditures by arming themselves with better information on when and where costs occur and what costs add to the value of a product. In the “traditional model of cost behavior”, costs are classified as either fixed or variable. Fixed cost remains constant within relevant range while Variable costs change proportionately with changes in the activity driver (Steliaros, 2006). In the second model, managers deliberately adjust resources in response to changes in volume. While efficient production specifies the optimal combination of inputs for a given level of output, several factors may intervene to preclude or limit resource adjustments. These factors are hypothesized to lead to “sticky” cost behavior in which costs adjust asymmetrically; more quickly for upward than for downward demand changes.

A key factor in determining whether adjustment occurs is the cost of adjustment itself. For example, increasing labor inputs may require search, recruitment, and training costs while decreasing these same inputs might require severance payments. When adjustment costs are present, managers weigh the costs of releasing (adding) resources when activity decreases (increases) against the alternative of not adjusting. Adjustment occurs if the adjustment costs are more than compensated by incremental profits associated with producing efficiently at a new level of output (Kallapur & Eldenburg, 2005). Adjustment costs may be a property of the production function, as in the example of labor adjustments, or they may arise if managerial incentives diverge from those of the firm. For example, if an individual manager experiences loss (gain) of status or position when the number of his subordinates decreases (increases), his decisions about reducing (increasing) labor resources may be colored by private adjustment costs (Hamermesh, 1995).

In cases in which manager's compensation, job satisfaction or other rewards are linked to span of resource control, agency theory predicts that private adjustment costs motivate managers to grow faster than they shrink. Thus, a theory (or theories) about individual adjustment costs could be used to motivate tests of asymmetric cost behavior. In that case, one basis for the null hypothesis would be that adequate management controls and appropriate competition within the firm for scarce resources prevent this influence of individual managers from being manifest in sticky (asymmetric) cost behavior for the firm (Moel & Tufano, 2002).

Aside from the costs of adjustment, uncertainty about future events creates another impediment to adjustment. With certainty about the future level of demand, managers can easily calculate a payback period for recouping adjustment costs associated with re-establishing the optimal resource level for future output. Adjustment occurs when the new level of demand is expected to be sustained and/or adjustment costs are modest. With uncertainty about future demand this calculation becomes more difficult. In particular, while adjustment costs may be certain, the period in which they will be recovered is uncertain (Stelias, 2006). Indeed, part of the uncertainty is that in the future, the need for new and different adjustments may be indicated. In many circumstances significant uncertainty favors the “do nothing” alternative; however, it is important to note that this choice is itself cost management.

Moreover, like firm-level adjustment costs, theory does not support the thesis that uncertainty is associated with asymmetric adjustment that favors upward versus downward activity changes. Finally, no consideration of the effect of adjustment costs on efficiency decisions is complete without considering how managers evaluate losses incurred from producing with a suboptimal mix of resources. In a perfectly competitive market, failure to adjust would cause the firm to face higher costs than competitors who adjusted (or who entered the market with new, optimized production technology and capacity) while receiving identical (market) prices (Anderson et al, 2003).

2.2.2 Theory of Constraints

The theory of constraints (TOC) is a systems-management philosophy developed by Eliyahu (1995). The fundamental thesis of TOC is that constraints establish the limits of performance for any system. Most organizations contain only a few core constraints. TOC advocates suggest that managers should focus on effectively managing the capacity and capability of these constraints if they are to improve the performance of their organization. Once considered simply a production-scheduling technique, TOC has broad applications in diverse organizational settings (Luehrman, 1998). The theory of constraint focuses its attention on constraints and bottlenecks within the organization, which hinder speedy production. The main concept is to maximize the rate of manufacturing output i.e. the throughput of the organization. This requires examining the bottlenecks and constraints which are defined: A bottleneck is an activity within the organization where the demand for that resource is more than its capacity to supply (Flint, 2000).

A constraint is a situational factor, which makes the achievement of objectives more difficult, and then it would otherwise be. Constraints may take several forms such as lack of skilled employees, lack of customer's orders or the need to achieve a high level of quality product output. Using above definition, therefore, a bottleneck is always a constraint but a constraints need not be a bottleneck (Innes, 1998).

Theory of constraints challenges managers to rethink some of their fundamental assumptions about how to achieve the goals of their organizations, about what they consider productive actions, and about the real purpose of cost management. Emphasizing the need to maximize the objectives & revenues earned through sales

theory of constraints, focuses on understanding and managing the constraints that stand between an organization and the attainment of its goals (Beverley, 1996). The financial professional, playing a pivotal role in theory of constraints implementation, uses management accounting to focus on identifying, analyzing, and reporting key events and opportunities affecting the organization. Emphasizing the development and maintenance of core management information sources within an organization, management accounting serves as the basis for integrating the diverse sources of data available to decision makers (King, 2008).

2.2.3 Transaction Cost Economics Theory

The optimum level of inventory should be determined on the basis of a trade-off between costs and benefits associated with the levels of inventory. Costs of holding inventory include ordering and carrying costs. Ordering costs is associated with acquisition of inventory which includes costs of preparing a purchase order or requisition form, receiving, inspecting, and recording the goods received. However, carrying costs are involved in maintaining or carrying inventory and will arise due to the storing of inventory and opportunity costs. There are several motives for lower or higher levels of inventories and highly depends on what business a company is in. The most widely and simple motive of managing inventories is the cost motive, which is often based on the Transaction Cost Economics (TCE) theory (Emery and Marques, 2011). To be competitive, companies have to decrease their costs and this can be accomplished by keeping the costs of stocking inventory to a reasonable minimum. This practice is also highly valued by stock market analysts (Sack, 2000).

2.4 Determinants of Financial Performance of Listed Firms

There are a number of methods to measure a firm's performance, such as the ownership structure debt structure and the combination of the two above. From finance and accounting literature financial ratios are widely used to reflect the firms performance such as profitability measures (financial leverage), and liquidity (cash flows)

2.4.1 The Ownership Structure Performance Relation

The development and evolution of the Business environment to a single owner manager has given rise to new forms of modern enterprises such as private enterprises scattered in majority control and finally, family businesses. From the work of Adam Smith (1776) and Berle and Means (1932) the relationship between ownership structure and performance has caused much research to be favorable to the thesis of neutrality or that of the non-neutrality.

Neutrality thesis of the relationship structure of ownership performance seeking a relationship between the concentration index and performance, Demsteez Lehan (1935) studied the relationship between ownership structure and corporate performance by estimating a system of two simultaneous equations. This model allows to clearly specify the nature of the endogenous ownership structure. The results found out that the positive effect of the concentration of the shareholder, proven by other empirical studies is not seen when the endogeneity of for example the choice of price level or quality Radice (1971), Cable and Steer (1978). The relationship is taken into account. This thesis is likewise confirmed by Charreaux (1991) and Cho (1998) where the performance of equity would be opposed to the organizational form.

The non-neutrality of the relationship structure of ownership performance. This thesis was consistent with property rights or that of the superiority of individual interests in the behavior of leaders. Consistent with the results of Berle and Means (1932) and Jensen and Meckling (1976) empirical studies that have addressed this relationship distinguish two main factors coexist: the convergence of interests and management entrenchment. Performance is compromised as well Morck, Shleifer and Vishny (1988) establish a positive relationship between performance and ownership structure as part of corporate America, where the main shareholder owns between 0 and 5% of capital. This relationship is negative if the detention is between 5% and 25% positive and will be beyond the 25% threshold. Based on the theory of neutrality and that of the non- neutrality, we state the first hypothesis as, the performance of the company is sensitive to high levels of capital. Jensen and Meckling (1976) show that in the context of corporate capital dispersed diffuse shareholder influence positively the performance only if the financial market is very active. Otherwise, it is consistent to predict, a priori, a concentration of capital performance.

2.4.2 The Debt-Performance Relation

In his study of the financial structure and performance of firms, Abdennadher (2006) discusses the relationship debt-performance according to agency theory and signals in the first, debt aligns the interests of executives with those of shareholders. The relationship between performance and the debt is positive (Jensen and Meckling, 1976). It is negative when the agency costs related to the relationship managers / shareholders emerge and diminish the value of the firm.

However, this relationship is reversed in the theory of signals. In addition, in connection with this, Driffield (2005) explores a possible interaction between debt and firm performance using a system of simultaneous equations. They propose two alternative hypotheses for this inverse relationship. The first hypothesis focuses on the most successful companies. In the latter case the most successful companies reduce their debt levels to protect shareholder wealth in the risk of bankruptcy (Latrous, 2007). In the same context, Abdennadher (2006) shows the negative and significant effect of debt on performance in the Tunisian context for the study of twenty listed companies over the period 1996-200. The second hypothesis can be questioned. Hypothesis 2: Short and long-term account for the performance of the company: no capital market, companies are less efficient than others in a financial market with low debt ratio.

2.4.3 The Ownership Structure Debt Relation

Some research has attempted to examine the impact of ownership structure on debt policy in the context of political governance. The results of studies of this relationship are contradictory: Friend and Lang (1998), and De Forond a Farinha (2005) argue that equity managers have a negative impact on debt levels. Other studies confirm that the debt is positively correlated with property managers who wish to escape market discipline control (Nilsson, 2002). Leaders face a significant risk when they hold a significant percentage of the capital. They are forced to reduce debt levels to limit the risk of bankrupt. La Bruselerie (2004) and Latrous (2007) show that the relationship between the equity shareholders of the control and the debt level is non-linear.

Brailsford, Oliver and Pua (2002) suggest that for low levels of detention, the equity shareholders of leaders is positively related to debt in order to align interests and reduce agency costs. In addition, Brailsford, Oliver and Pua (2002) argue that property managers and property owners of blocks acting on the external debt levels. These authors confirm that the relationship between debt and ownership of an outer block is significantly positive. This result confirms the hypothesis that external blockholders are required to control the behavior of leaders. They manage, in addition, to demonstrate the non-linearity of the relationship between property managers and debt. In the end, and based on the theories of rooting and convergence of interests between managers and shareholders, we argue that ownership structure affects in different ways debt levels based on the share capital held by controlling shareholders. In fact, for a low level of holding of the majority shareholders, debt is highly practiced and neglected to lower the effect of diluting the ownership of capital related to external financing. Moreover, the economic power of the shareholders of the control is increased by debt. As a result, hostile takeovers will be canceled (Harris and Ravi, 1988). The debt can be seen as a determinant of equity controlling shareholders. The hypothesis of a possible interaction between ownership structure and debt levels will thus be exposed. Hypothesis 3: The level of debt of a business affects the ownership capital of controlling shareholders and vice versa.

2.5 Review of Empirical Studies

Karim and Jhantasana (2005) investigated cost efficiency of Thailand's life insurance industry and studied the relationship between profitability and cost efficiency. The purpose of their paper was to evaluate the cost efficiency and its relationship with profitability in Thailand's life insurance. They examined the association between

profitability and inefficiency by examining the association between annual profitability and inefficiency. They found that the mean inefficiency was negatively correlated to size and ROE and ROA ratios showing that efficient firms on average had higher returns on equity and on assets indicative of inefficiency effect on profitability of insurance companies.

Karim and Jhantasana (2005) also found that the mean inefficiency is negatively correlated with size suggesting the need for rationalization in the insurance industry in Thailand. These results imply that consolidating the large number of smaller insurers should be high on the government's agenda, and the capital requirements for life insurers need to be increased. The results also revealed that inefficiency is negatively correlated with ROE and ROA ratios. This shows that efficient firms, on average, have higher return on equity and on assets. This indicates that inefficiency has substantial effect on the profitability of life insurance companies. The study however found no significant relationship between inefficiency and age of the firm which is contrary to the argument that more experienced firms are more efficient than the less experienced ones because new firms are unaware of their abilities and need time to decide on their optimal size but because with time the less efficient firms exit the market, this leaves a population of more technically efficient firms.

A study was done by Alvaro, Filomena, Miguel and Joanna (2009) on The Efficiency and Effectiveness of Public Spending on Tertiary Education in Europe. Efficiency of public spending on tertiary education is evaluated using two different methods: a semi-parametric method and the stochastic frontier analysis (SFA). The first method includes data envelopment analysis (DEA) as a first stage and the regression of the

obtained efficiency scores on explanatory factors as a second step. The latter is essentially a regression of total tertiary education cost on the considered outputs and factor costs, including the explicit modelling of country-specific efficiency scores. Outputs considered were teaching measured by number of grandaunts, and research measured by the number of published reports in academic journals and author affiliations to the schools.

The inputs considered were the number of students enrolled, cost of tertiary education, number of teaching staff and amount of time spent on the courses. Results from the semi-parametric and SFA methods are essentially consistent. Countries with secondary education systems of good quality and where tertiary education is organised along certain lines (in terms of staff policy autonomy and flexibility, of independent and public evaluation of institutions, and of output oriented funding rules) tend to obtain better results in education and research from the resources used. They found that when funding to institutions depends more on outputs (e.g., graduations and publications) and less on historical attributions or inputs, efficiency tends to increase, Efficiency tends to be higher in countries where institutions are publicly evaluated by stakeholders and/or independent agencies and Institutions' autonomy to hire and dismiss academic staff and to set their wages is correlated with higher efficiency.

A case study using The Efficiency Frontier as a Method for Gauging the Performance of Public expenditure (a case study of Belgium) by Eugene (2008), focused on 3 ministries including the education Sector, the Health sector and Public safety and order. he found that although Belgium did not lie on the efficiency frontier it was

close to it and therefore relatively efficient in comparison to other countries in the same region, in education Belgium was found to be less efficient than the countries around it as its outcome per unit of expenditure on education was low, in Public safety and order Belgium did poorly by spending more in Public safety and order while yielding lower results compared to the other countries.

Studies conducted in Kenya looked at X- efficiency and how variables such as quality improvement, quality of loans affect firm performance. These studies were limited to the banking industry. These studies expressed mixed views in each of their study for the various industries. Musyoki (2003) compared quality improvement of banks with financial performance in an attempt to establish if there is any link between quality improvement and bank profitability. Using a sample of 46 commercial banks for the period 1998 to 2002, he found out that quality improvement has a short term effect on financial performance and that there are undoubtedly other benefits gained from improved quality, but they may be difficult to measure. Two years later, Njihia (2005) sought to determine the determinants of profitability of commercial banks in Kenya.

The sample data was comprised of 36 banks over a period of six years, from 1998 to 2004. Using multiple regression analysis technique, established that the critical variables affecting profitability of commercial banks in Kenya are: non-performing loans and advances, interest expense on customers' deposits, operating expenses, provision for doubtful debts and total assets (Njihia, 2005). Efficiency in expense management (cost efficiency) was one of the most significant determinants of commercial bank profitability.

Finally, Sakina (2006) sought to investigate on the X-efficiency of commercial banks in Kenya and to establish whether the X- efficiency of these banks is affected by economies of scale. X-efficiency is defined as the general efficiency of a firm judged on managerial and technological criteria in transforming inputs at minimum costs into maximum profits. It includes intra-bank economic efficiency; intra-bank motivational efficiency - individual personality; and external motivational efficiency - arising from management incentives and the environment (Adongo et al., 2005).

The data set consisted of annual operation costs of banks including interest expense. Deposits and borrowed funds were treated as the inputs while the loans to customers, investments, and other incomes were treated as outputs. The sample comprised of 33 banks for the period 2000 to 2005. A stochastic econometric cost frontier was used to measure X-efficiency level of commercial banks in Kenya. The empirical results obtained established that X-efficiency existed in the Kenya's commercial banks industry at 18% and it was found to be affected by economies of scale. In a bid to establish whether the persistence of X-efficiency was related to bank size, Sakina (2006) further found out that average large banks tend to be more persistent than average small banks at the level of 23%. Besides, bank size affects X-efficiency for large banks.

Arnolds and Njuguna (2009) did a paper on Improving the Financial Efficiency of Pension Funds in Kenya, taking a sample of 362 pension funds drawn from the Kenyan RBA register and applied data envelopment analysis to determine efficiency of the pension funds. They hypothesized that pension fund Governance, adherence to regulations, proper investment strategies, fund ethics, risk management, fund design,

membership age, fund design and operational efficiency would all have an impact on financial efficiency of the Fund. The empirical results showed that pension fund governance, leadership and regulations do not influence the financial efficiency of these funds. The results however reveal that fund size is the most important determinant of financial efficiency of the pension funds.

2.6 Summary of the Literature Review

Different types of approaches have been employed in literature when evaluating the cost efficiency of firms'. These methods differ primarily in the assumptions imposed on the data in terms of (a) the functional form of the best practice frontier (a more restrictive parametric functional form versus a less restrictive nonparametric form), (b) whether or not account is taken of random error that may temporarily give some production units high or low outputs, inputs, costs, or profits, and (c) if there is random error in the probability distribution assumed for the inefficiencies (e.g., half-normal, truncated normal) used to disentangle the inefficiencies from the random error. Thus, the established approaches to efficiency measurement differ primarily in how much shape is imposed on the frontier and the distributional assumptions imposed on the random error and inefficiency. As much extensive research has been done on efficiency, it still remains in its infancy. Researches and studies; are still in an early exploratory stage and have not yet developed a consistent theory for efficiency. Although efficiency has moved from a traditional role to a strategic role, it is understood in different ways in the literature.

Efficiency has been discussed from many aspects in the literature. The existing conceptual approaches only consider certain individual contributions and therefore focus on specific aspects of efficiency. Thus, the study introduced a comprehensive conceptual framework for efficiency that covers the concept, the concerns and objectives, the principles, the analysis fields & activities, the objects, the instruments and the key support factors of efficiency. Efficiency literature lacks a comprehensive framework that covers the concept, the objectives, the principles, the analysis fields & activities, the objects, the instruments and the key support factors to meet different operational challenges that firms encounter from time to time and at different stages of development. Further research is needed to enhance the suggested framework for efficiency. Future research should explore the organizational issues of the efficiency. In addition, the suggested framework for Efficiency can be operationalized and thus used in empirical research. This requires future study that provides empirical evidence for the suggested framework for efficiency. Finally, continuous research efforts will contribute to further studies that develop a consistent theory for efficiency. The present study seeks to fill the gap on the impact of cost efficiency and firms' financial performance of firms listed in the NSE in Kenyan.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology to be used in this study. Section 3.2 describes the Research design, Section 3.3 describes the study Population and Sample; Section 3.4 outlines the data collection procedures and sources; and Section 3.5 describes the research model and the data analysis tools to be applied.

3.2 Research Design

The quantitative approach to research involves numerical data, and the qualitative approach involves textual data (Symonds & Gorard, 2010). A third method of research that utilizes elements from both the qualitative and the quantitative approaches is categorized as mixed-methods (Symonds & Gorard, 2010). The quantitative approach was selected for its suitability to the purpose of developing research questions and its appropriateness for the type of numerical data required in the study (Schweitzer, 2009). Creswell (2009) stated that the quantitative approach is most appropriate for the analysis of numerical data.

Quantitative design selected for the study was non-experimental. In experimental designs, researchers measure the influence of a variable on another variable through the application of a treatment (i.e., experiment) (Creswell, 2009). According to Herzinger and Campbell (2007), the experimental design involves determining causation between variables. A quantitative design that does not involve the determination of influence of a treatment is non-experimental (Belli, 2008). The experimental design was not used for the study because the purpose was not to

introduce a change in the settings or participants. The non-experimental design aligned with the objectives of the study.

The study used the Stochastic Frontier Analysis (SFA) to measure Cost efficiency of Firms in the NSE. The aim was to establish the level of cost efficiency and effects of Financial Performance of firms on NSE. Using the Stochastic Frontier Analysis, the efficient cost frontier was determined hence the level of cost efficiency in each firm. The persistency of cost efficiency was measured using the Spearman Rank correlation coefficient. The Pearson correlation coefficient was used to compare the relationship between cost efficiency and financial performance.

3.3 Population

The population is an aggregate of all that conform to a given characteristic (Mugenda and Mugenda, 2003). The population of interest for this study was all the 60 companies listed on NSE in Kenya. Thus it was a census survey. There were 60 companies listed in the Nairobi Securities Exchange according to the Nairobi Securities Exchange Handbooks. These companies formed the population of the study.

3.4 Sampling Design

The sample comprised of firms listed in the NSE who had published financial data was available continuously over the sample period of the study 2008 to 2013. The sample included firms in the following sectors, Agriculture, Automobile and accessories, Banking, Commercial & Services, Construction & Allied, Energy and Petroleum, Insurance and Investment firms.

3.5 Data Collection

The study applied secondary data which was extracted from the firms' annual reports and financial statements for the six-year period commencing 2008 up to 2013. The period was selected because continuous financial data was available for the firms over the entire period. This was obtained from the published financial report. The data extracted from the financial statements included the following: Total Assets, Total Revenue, Net Profit and Noninterest Expense.

3.6 Research Model

A simple regression equation was used in the study. It offered the value of R², which was used to indicate how well the model was performed. The equation was as follows:

$$\text{ROA} = \text{B}_0 + \text{B}_1\text{E} + \text{e}$$

Where ROA = Return on Assets which depict financial performance

B₀ is a constant; B₁, B₂ are the coefficient, E is the Efficiency on cost while e is the error term.

3.6.1 Ratio Analysis of Performance

a) Return on Assets

ROA is the product of the profit margin and asset utilization ratios. The profit margin measures how effectively the firms turn a Shilling of revenue into a Shilling of bottom line profits. Salaries are a major component of non-interest expense and may be a problem if noninterest expense to operating income is being too high. Additional breakdowns for each component of these categories may be desirably better. If this

ratio appears to be too low the analyst will first wish to see if the provision for loan losses is too high.

$$\text{ROA} = \frac{\text{Net Income}}{\text{Average Total Assets}}$$

b) Efficiency ratio

Efficiency ratio evaluates the overhead structure of a financial institution. The efficiency ratio gives us a measure of how effectively companies are operating. Not all companies calculate efficiency ratio the same way. If the efficiency ratio is getting lower, it is good for the firms and its shareholders.

$$\text{ER} = \frac{\text{Noninterest Expense}}{\text{Total Revenue}}$$

F-test was used to test for joint significance of all coefficients and T-test for significance of individual coefficients. T-test is interpreted based on p significance value. A value greater than .05 means that the variability in the two conditions is about the same. It means that the variability in the two conditions is not significantly different, while a value less than 0.05 mean that there is significance.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND PRESENTATION

4.1 Introduction

This chapter presents analysis and findings of the research. From the study population target of 60 companies, 47 companies were sampled used for analysis since they had traded consistently for the 6-year period 2008-2013, representing 100% response. The data was collected from the NSE offices and consisted of Return on Assets (ROA); Total Assets, Net Profit (NP) and Noninterest Expenses. The study used both descriptive and inferential statistics to analyze the data found.

4.2 Descriptive Statistics

4.2.1 Annual Averages of the Companies Statistics

Table 4.1: Annual Averages

Year	ROA in %	Efficiency in Kshs.
2008	15.2934633	0.282434
2009	16.6146963	0.327828
2010	24.0781524	0.816907
2011	29.593183	1.021038
2012	31.8094961	1.168216
2013	35.016181	1.231303
Average	21.8761	0.67462

Source: Author's own computation based on data obtained from Nairobi Securities Exchange

From the data, the average Return on assets was usually on the rise for the six year Period from 2008 to 2013 accompanied by a similar rise in efficiency. As can be noted, there is a general increment for ROA from 15.3 % in 2008 to 35.01 % in 2013, the efficiency ratio also showed an increasing trend from 0.282 to 1.23. From the findings, it can generally be deduced that Return on assets for the companies rose

concurrently with a rising in cost efficiency over the 6 year period.

Table 4.2: Descriptive statistics for Return on Assets

Year	Minimum	Maximum	Mean	Std. Deviation
2008	0.19228194	1.748384694	0.176523944	0.346893709
2009	0.026828448	1.090348216	0.180956071	0.25473205
2010	0.008517872	4.340312011	0.313748823	0.836828332
2011	-0.0291893	2.796782479	0.253902745	0.58427915
2012	0.291885839	1.142294491	0.129683994	0.233779509
2013	0.109482243	0.361367	0.067315282	0.082665123
Total average	-0.08441	1.786892	0.184893	0.366029

Source: Author's own computation based on data obtained from Nairobi Securities Exchange

The findings as depicted in table 4.2 shows that the lowest value for ROA is negative 0.029183 in year 2011 while the maximum was 4.340312011 in 2010, with the highest mean value of 0.313748823 in 2010. Additionally a high standard deviation is an indication of variation in financial performance for the responding companies. There is fluctuation of ROA over the study period. This shows that different sectors are affected differently by the economic forces which are external to the companies.

Table 4.3: Descriptive statistics for Efficiency Ratio

Year	Minimum	Maximum	Mean	Std. Deviation
2008	0.024381	0.90750	0.289359	0.20758
2009	0.007148	1.276285	0.339672	0.279739
2010	0.025356	5.268607	0.885966	1.02654
2011	0.046563	6.546787	1.106911	1.428736
2012	0.004226	0.706457	0.175277	0.171663
2013	0.001914	1.223418	0.245694	0.24597
Total average	0.025314	2.508861	0.504525	0.534318

Source: Author's own computation based on data obtained from Nairobi Securities Exchange

From the findings, the lowest efficiency ratio value for all the companies under study was 0.001914 in 2013 while the highest was 6.546787 in 2011. In addition there is a fall in the mean value from 0.289 in 2008 to 0.2456 in 2013. This fall in efficiency ratio from 2008 to 2012 in firms indicate profitability. Companies desire a lower efficiency ratio because this means that the firms are making considerably more than they are spending and is therefore on sound fiscal footing.

4.3 Correlation Analysis

To quantify the strength of the relationship between the variables, the study used Karl Pearson's coefficient of correlation. The Pearson product-moment correlation coefficient is a measure of the strength of a linear association between two variables and is denoted by r . The Pearson correlation coefficient, r , can take a range of values from -1 to +1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases. Pearson's Correlation Coefficient was carried out and the results obtained are presented in table 4.4 below.

Table 4.4: Pearson's Correlation Coefficient Matrix

	ROA	Efficiency
ROA	1	
Efficiency	0.992712	1

Source: Author's own computation based on data obtained from Nairobi Securities Exchange

The findings revealed a significant positive relationship between Return on Asset and Cost Efficiency ($r = .9927$), thus, implying that Cost Efficiency influences financial performance of Kenya companies.

4.4 Regression Analysis

Regression analysis is the statistical technique that identifies the relationship between two or more quantitative variables: a dependent variable, whose value is to be predicted, and an independent or explanatory variable (or variables), about which knowledge is available. The technique is used to find the equation that represents the relationship between the variables. Regression analysis is used to understand the statistical dependence of one variable on other variables. The technique can show what proportion of variance between variables is due to the dependent variable, and what proportion is due to the independent variables. The relation between the variables can be illustrated graphically, or more usually using an equation. The study adopted a simple linear regression guided by the following model:

$$ROA = B_0 + B_1E + e$$

Where ROA = Return on Assets which depict financial performance

B_0 is a constant; B_1 , is the coefficient, E is the Efficiency while e is the error term.

e_t = Error term

<i>Regression Statistics</i>	
Multiple R	0.992711807
R Square	0.985476732
Adjusted R Square	0.981845915
Standard Error	1.098262361
Observations	6

Source: Author's own computation based on data obtained from Nairobi Securities Exchange

In this case, the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) R² equals 0.98547 that is, efficiency explain 98.5% of the variance in financial performance.

Table 4.5: Anova

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	327.381	327.3816	271.42	0.0483105
Residual	4	4.82472	1.20618		
Total	5	332.206			

Source: Author's own computation based on data obtained from Nairobi Securities Exchange

In this case, the significance value of the F statistic is 0.0483 indicated that the predictor variable (efficiency) explain a variation in financial performance and that the overall model is very significant to the study.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	beta 0	04961			
Total assets	-43.058	.4032	26.648	1.814	.129
Total revenue	34.123	13.901		.070	.876
Noninterest expense	26.789	11.469	72.336	1.295	.787
Net Profit	23.235	22.145	33.302	0.622	.136

Source: Author's own computation based on data obtained from Nairobi Securities Exchange

4.4.1 Regression Equation

Based on regression coefficients results the regression equation can be written as follows;

$$ROA = -43.058 + 26.789E + e_t$$

Regression analysis reveals the extent to which cost efficiency significantly predicts the financial performance of firms. The superiority in prediction is determined by a beta coefficient of 26.648. The findings suggest that to attain a proper financial performance, Kenyan companies need to consider the measures of cost efficiency as the accounting determinants in their day to day operations.

4.5 Summary and Interpretation of the Findings

From the findings, there was a general increment for return on assets (financial performance) from 2008 to 2013; and consequently the efficiency. Hence return on assets for the companies rose concurrently with a rising efficiency over the 6 year period. Cost Efficiency strategy helps firms to produce the standard, high-volume product or service at the most competitive price to customers, it also help to create higher financial performance for firms competing in the emerging economies, such as China, India and Japan, as firms can gain a relative advantage because of their lower costs in labor recourse and manufacture (Aulakh 2000). Toppinen (2006) in his report, found out the cost-management indicators, statically, explain better on the short-term financial performance, than value- added creation, which has an effect on long-term financial performance and turnover growth in the future. They conclude that, cost-efficiency is a prerequisite for the business, and the latest worldwide economic recession is just the best example to confirm the validity.

From the findings, there was a fall in efficiency ratio from 2008 to 2013 in firms indicating profitability. Companies desire a lower efficiency ratio because this means that the firms are making considerably more than they are spending and is therefore on sound fiscal footing. Previous findings have shown that for all companies, low efficiency leads to high overhead net interest margins that are higher in low-income countries. Cross-country research has found that banking market efficiency is negatively correlated with inflation, corruption and concentration (Detragiache, Gupta, and Tressel, 2005). In addition, the findings revealed a significant positive relationship between Return on Asset and Efficiency ($r = 0.9927^{**}$, $P\text{-value} < 0.05$), thus, implying that efficiency influences financial performance in Kenyan companies. Additionally, employing efficiency initiatives will more likely bring in a positive effect on companies financial performance by promoting aggressive cost reduction initiatives, developing and continuing sustainable efficiency programs and also it will help the management in understanding the short-term and long-term effects of cost reduction initiatives and efficiency programs.

Performance assessment of companies has been the subject of numerous studies, and several discussions in accounting and management have focused on the matter that which of the performance assessment criteria is more valid. Some people believe that there is no ideal criterion to measure the performance, but, by contrast, there are several assessment methods and each method has some major shortcomings. If such methods are applied to measure the performance and to determine the companies' value, they will not definitely be able to find out the real value of companies.

However, performance evaluation of companies is a necessity and it has to be done through using accepted criteria which consider different aspects of limitation on activities and the possibility of taking advantages of facilities (Healy, 1998) Generally, the performance measurement criteria are divided into two groups: financial and non-financial criteria (Spigelman,1994). Non-financial criteria include production, marketing, administrative, and social criteria while financial proportions are the examples of techniques proposed as financial criteria. Some financial researchers suggest applying combined (financial and non-financial) criteria.

However, using such criteria is quite complicated due to the difficulty of determining the type of the criteria, the kind of their correlation, and the weight of each of the criteria (Bacidore, 1997).

Regarding the ROA the research found that efficient firms are characterized by relatively larger ROA, efficient companies had an average of ROA amounted to 0.45 while inefficient companies had an average of ROA of less than 0. The findings cannot imply that efficient firms had an average size higher than inefficient ones. On the other hand the considerable standard deviation of the efficient firms group indicated that there were extreme values within the group. In order to verify the statistical significance of the efficiency score difference between efficient and inefficient in regards to ROA and, the results would suggest that difference is statistically insignificant.

Moreover, performance evaluation of companies is a necessity and it has to be done through using accepted criteria which consider different aspects of limitation on activities and the possibility of taking advantages of facilities (Healy, 1998). Financial

variables have been applied to measure the performance and efficiency of companies. As can be noted, the relationship between the financial variables reaches the results that can encourage managers to apply such concepts and criteria for representing a real and precise view of enterprises' performance.

Regression, analysis revealed the extent to which efficiency significantly predicts the financial performance. The superiority in prediction is determined by a beta coefficient of 26.648. The findings suggest that to attain a proper financial performance, Kenyan companies need to consider the measures of cost efficiency as the accounting determinants. The findings are in line with a study by Hassan (2003) on Turkish firms which showed an increase in their efficiency. They attributed the increase in cost efficiency to improved resources management practices.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This paper was a study of the effect of cost efficiency on financial performance of companies quoted on Nairobi securities Exchange in Kenya. It began with a look at the cost efficiency techniques; Quality costing and Business Process Reengineering. The paper also analyzed how financial positions of companies are affected by being cost inefficient, thus the need to manage cost for the firms to attain their prime goal. The objective of this paper was to find out whether proper cost efficiency policies can enhance sound financial performances of companies in Kenya. The research methodology used was a census survey of all the quoted companies on NSE, intending to investigate the effect of cost efficiency, noninterest expense ratio was divided total revenue ratio. In order to determine financial performance net profit ratio was divided by total assets ratio. The data collected was secondary data from the NSE Handbooks and websites of the companies. The Statistical Package for Scientific Studies was used in analysis, and it was found that adherence to cost efficiency policies have a positive impact on company's financial performance. The findings revealed a significant positive relationship between Return on Asset and Cost Efficiency ($r = .9927$), thus, implying that Cost Efficiency influences financial performance of Kenya companies.

5.2 Conclusions

From the findings, the estimated scores of cost efficiency for companies quoted in NSE in Kenya ranged on the average of between 67.462. The efficiency average was gotten by sum of efficiency score divided by number of sampled companies over the period of study. Taking into consideration of the results provided, certain inputs are vital which impact on the level of cost efficiency of these firms. This implies steps towards efficiency of these firms include great consideration of their capital structure, debts and interest yielding on investments with other entities.

The evolution of ROA of most Companies in Kenya is only mildly volatile and high on average, as the findings depict. The research indicated that the firms had an average ROA of 15.2934% in 2008 compared to ROA of 35.016 % in 2013. 2013 had very high financial performance in consideration on average and across period of study. The above policy recommendations are considered with an unchanging environmental impact since the work did not go further into the environmental impact on the Companies cost efficiency. The results obtained from this study was in line with some previous study of like topic. Exemplary situation is work by Detragiache, Gupta and Tressel, (2005) which concluded banking efficiency is negatively correlated to inflation, corruption and concentration; hence cost efficiency is always lower than will be predicted. The overall conclusion is that cost efficiency greatly and significantly and positively affects financial performance of companies quoted at Nairobi Securities Exchange.

5.3 Policy Recommendations

From the findings several recommendations are made that depict strategies for the companies in order to benefit from the high efficiency scores and potential improvement for the technically inefficient firms. First, the company management should take care about the improvement of the scale efficiency as well as pure technical efficiency and the potential improvements that come from the analysis results of this research in order to improve the efficiency the inefficient Firms. The researcher recommended for the companies to think about the cost efficiency especially technically efficient while they are not superiors in their ROAs. Also the firms should consider cost efficiency analysis as important factor in their profitability and risk analysis and management. The results will enrich the top management with a lot of relevant information needed for monitoring and evaluation system and for strategic planning as well.

5.4 Limitations of the Study

The study encountered several limitations. First, some companies did not disclose some data especially on sensitive information regarding their profitability because of the suspicion that their information would fall in the hands of their competitors. In addition, time and resources allocated to this study could not allow the study to be conducted as deeply as possible in terms of other predictor variables for financial performance. This left out valuable contribution from the respondents who were involved in the day-to-day duties in these organizations. It therefore may not be representative of all companies in the country. However it has taken into account other views along theoretical analysis. There was also limited availability of local literature with respect to cost efficiency and financial performance of companies in

Kenya which was overcome by consultation to foreign literatures and reference to other relevant locally published literature.

5.5 Suggestions for Further Research

There is need for further studies to carry out similar research for a longer time period. A similar study should also be carried out on SMES with cost as the proxy for output to try and assess whether the cost efficiency and financial performance is drastically altered by the change of variables .Further research is recommended on profit efficiency and to test the relationship between the resulted scores and return on assets and, return on equity in order to draw the map for long term planning. Further, it is recommended to conduct time series study covering a wide period of time to identify the changes in efficiency for each company to find the reasons behind changes.

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APPENDICES

Appendix I: List of Companies Quoted at NSE

	AGRICULTURAL COMPANIES
1.	Eaagads Ltd Ord
2.	Kapchorua Tea Co. Ltd
3.	Kakuzi
4.	Limuru Tea Co.
5.	Rea Vipingo Plantations Ltd
6.	Sasini Ltd
7.	Williamson Tea Kenya Ltd
	COMMERCIAL AND SERVICES
8.	Express Ltd
9.	Kenya Airways Ltd
10.	Nation Media Group
11.	Standard Group Ltd
12.	TPS Eastern Africa (Serena) Ltd
13.	Scangroup Ltd
14.	Uchumi Supermarket Ltd
15.	Hutchings Biemer Ltd
16.	Longhorn Kenya Ltd
	TELECOMMUNICATION AND TECHNOLOGY
17.	Safaricom Ltd
	AUTOMOBILES AND ACCESSORIES
18.	Car and General (KENYA) Ltd
19.	CMC Holdings Ltd
20.	Sameer Africa Ltd
21.	Marshalls (E.A.) Ltd
	BANKS
22.	Barclays Bank Ltd
23.	CFC Stanbic Holdings Ltd
24.	I&M Holdings Ltd
25.	Diamond Trust Bank Kenya Ltd
26.	Housing Finance Co Ltd
27.	Kenya Commercial Bank Ltd
28.	National Bank of Kenya Ltd
29.	NIC Bank Ltd

30.	Standard Chartered Bank Ltd
31.	Equity Bank Ltd
32.	The Co-operative Bank of Kenya Ltd
	INSURANCE
33.	Jubilee Holdings Ltd
34.	Pan Africa Insurance Holdings Ltd
35.	Kenya Re-Insurance Corporation Ltd
36.	Liberty Kenya Holdings Ltd
37.	British-American Investments Company (Kenya) Ltd
38.	CIC Insurance Group Ltd
	INVESTMENT
39.	Olympia Capital Holdings Ltd
40.	Centum Investment Co Ltd
41.	Trans-Century Ltd
	MANUFACTURING AND ALLIED
42.	B.O.C Kenya Ltd
43.	British American Tobacco Kenya Ltd
44.	Carbacid Investments Ltd
45.	East African Breweries Ltd
46.	Mumias Sugar Co. Ltd
47.	Unga Group Ltd
48.	Eveready East Africa Ltd
49.	Kenya Orchards Ltd
50.	A. Baumann CO Ltd
	CONSTRUCTION AND ALLIED
51.	Athi River Mining
52.	Bamburi Cement Ltd
53.	Crown Berger Ltd
54.	E. A. Cables Ltd
55.	E. A. Portland Cement Ltd
	ENERGY AND PETROLEUM
56.	KenolKobil Ltd
57.	Total Kenya Ltd
58.	KenGen Ltd
59.	Kenya Power & Lighting Co Ltd
60.	Umeme Ltd

Appendix II: Consolidated Firms Data (2008 -2013)

sector/firm	Year	Total assets	Total revenue	Net income	Noninterest expense
AGRICULTURE					
Eaagads Ltd	2013	463,295	68,025.00	-59,215	83223
Kapchorua Tea Co.	2013	568,826	157,075	21,805	14,373
Kakuzi	2013	3,570,362	1,384,375	165,028	346,936
Limuru Tea Co.	2013	568,826	157,075	21,805	14,894
Rea Vipingo Plantations Ltd	2013	2,576,767	2,570,103	442,466	205,526
Sasini Ltd	2013	8,323,115	2,816,834	91,689	66,718
Williamson Tea Kenya Ltd	2013	1,689,490	1,353,206	179,718	76,035
COMMERCIAL AND SERVICES					
Express Ltd	2013	319,339	387,494	230	1,695
Kenya Airways Ltd	2013	71,829,000	98,860,000	-7,864,000	10,826,000
Nation Media Group	2013	568,826	157,075	21,805	135,387
Standard Group Ltd	2013	2,715,111	4,818,808	189,493	111,187
TPS Eastern Africa (Serena) Ltd	2013	13,994,188	6,841,420	668,531	304,717
Scangroup Ltd	2013	12,949,665	3,850,394	790,143	171,058
Longhorn Kenya Ltd	2013	568,826	157,075	21,805	16,374
Safaricom Ltd	2013	92,265,128	124,287,856	17,539,810	28,072,654
Car and General (KENYA) Ltd	2013	6,901,430	7056021	379,405	13502
CMC Holdings Ltd	2013	568,826	157075	21805	14,894
Sameer Africa Ltd	2013	567,897	272397	54,281	31131
Marshalls (E.A.) Ltd	2013	868,826	257075	31805	15,413
BANKS and Insurance					
Barclays Bank Ltd	2013	206,739	27424	7623	15565
I&M Holdings Ltd	2013	141,200,545	14483258	4974956	4672154
Diamond Trust Bank Kenya Ltd	2013	166,520,351	14499283	5230754	6222779
Housing Finance Co Ltd	2013	47,389,377	5440059	1052214	2160498
Kenya Commercial Bank Ltd	2013	390,851,579	47862478	14341552	27738719
National Bank of Kenya Ltd	2013	92,555,717	8165790	5638114	3570398
NIC Bank Ltd	2013	121,062,739	11642416	3237307	4320742
Standard Chartered Bank Ltd	2013	220,391,180	21526288	9486260	5094655
Equity Bank Ltd	2013	277,728,818	41861288	19150422	13277796
Jubilee Holdings Ltd	2013	61,159,185	18042639	3319158	4828781
Kenya Re-Insurance Corporation Ltd	2013	28,222,587	11661605	3516746	8392802
Liberty Kenya Holdings Ltd	2013	568826	157075	21805	36178
Industrial and Allied					
Olympia Capital Holdings Ltd	2013	614529	501868	136720	141740
Centum Investment Co Ltd	2013	29597220	4883200	3055372	795826
Trans-Century Ltd	2013	23840273	11807576	626432	2509021
East African Breweries Ltd	2013	58556052	59061875	6944744	7555030
Eveready East Africa Ltd	2013	940652	1428278	45411	249979
Mumias Sugar Co. Ltd	2013	20088453	11957823	-1669716	2235999
Unga Group Ltd	2013	8316927	15759078	508020	309985
Athi River Mining	2013	22856692	14179208	1348803	651257
Bamburi Cement Ltd	2013	69995000	33928000	4581000	1843000
Crown Berger Ltd	2013	2945434	5158993	211268	119599
E. A. Cables Ltd	2013	6809265	4502964	398202	213092
ENERGY AND PETROLEUM					
KenolKobil Ltd	2013	28121673	109687453	478009	3369232
KenGen Ltd	2013	188673282	17722192	5250136	10575208
Umeme Ltd	2013	888906000	965752000	83667000	31605000

	Date	Total assets	Total revenue	Net income	Noninterest expense
Real vipingo plantations	2012	2,476,618	2,571,725	380,433	174,860
Sasini ltd	2012	8,924,080	2,779,883	124,113	85,225
Kakuzi	2012	3,571,700	2,043,332	405,104	369,056
Limuru tea	2012	320,043	116,012	101,834	44,787
Eaagards ltd	2012	573,356	157,075	21,805	14,373
Kapchorua tea	2012	1,962,897	1,406,794	77,968	34,608
Williamson tea	2012	7,245,207	3,607,409	854,740	308,759
Commercial and services					
Marshalls (E.A)ltd	2012	567,095	234,306	-165,527	165,527
Car and general	2012	5,705,400	5,711,529	262,543	425,389
Kenya airways ltd	2012	77,432,000	107,897,000	1,660,000	456,000
CMC hondings	2012	12,957,113	11,730,774	590,729	1,280,565
Nation media group	2012	10,677,400	12,346,800	2,510,300	994,300
TPS eastern africa	2012	13,584,076	5,343,960	493,588	227,928
Std group	2012	3,500,548	3,617,816	183,307	82,057
Express kenya	2012	495,609	22,908	13,028	13,236
Longhorn kenya ltd	2012	354,922	184,597	71,784	29,696
Scangroup ltd	2012	8,646,961	13,056,890	744,074	3,291,430
Access kenya group	2012	2,265,714	1,900,620	151,377	869,824
Sameer africa ltd	2012	2,326,723	3,960,967	189,755	110,865
Safaricom	2012	84,283,777	106,995,529	12,627,607	4,741,793
Banks and insurance					
Barclays	2012	184,825	27,424	18,145	2,896
Housing finance	2012	40,956,577	5,440,059	743,334	1,128,524
KCB	2012	367,379,285	43,082,218	30,636,232	26,851,195
National bank	2012	92,555,717	5,376,734	8,430,119	2,859,196
Pan africa insurance	2012	16,473,522	7,920,841	698,271	856,582
DTB	2012	135,461,412	16,579,014	4,067,978	984,696
Jubilee insurance holdings	2012	47,417,562	6,693,303	2,284,501	408,802
Std chartered	2012	195,352,756	19,375,477	8,069,533	8,398,595
NIC	2012	108,348,593	11,467,574	3,036,794	2,832,257
Equity bank	2012	243,170,458	30,847,947	12,080,255	7,145,470
I&M holdings	2012	119,233,345	12,718,823	4,119,558	1,815,085
Kenya reinsurance corp	2012	23,787,957	8,944,635	2,801,892	142,743
Industrial and allied sector					
Athi river	2012	26,953,100	11,400,569	1,245,638	544,658
BOC kenya ltd	2012	1,989,541	1,294,550	197,374	346,565
BAT	2012	9,123,815	30,503,560	3,735,850	1,236,176
Carbacid investments ltd	2012	2,000,650	921,753	389,287	146,157
East africa cables	2012	6,248,642	4,300,608	522,060	231,183
EABL	2012	32,100,534	55,522,166	11,186,113	7,450,204
Mumias sugar	2012	21,679,458	15,542,686	2,012,679	248,650
Unga group ltd	2012	6,410,259	15,976,763	348,195	212,683
Bamburi cement	2012	43,038,000	37,491,000	10,712,000	2,294,000
Crown paints	2012	2,258,263	4,432,877	133,543	90,627
East africa portland cement	2012	14,091,006	8,614,806	-821,486	61,575
Eveready east africa	2012	1,150,729	1,374,789	70,084	358,389
Centum investment	2012	1,041,242	1,272,313	1,189,405	177,270
Transcentury	2012	21,845,754	13,487,229	740,647	2,293,137
Energy and petroleum					
Kenol kobil ltd	2012	32,684,166	192,527,486	-6,284,575	8,964,664
Kengen	2012	163,143,957	15,999,078	2,822,600	1,222,590
Total kenya ltd	2012	32,980,654	119,788,989	-2,020,142	137,841

Sector\Firm	Year	Total Assets	Total revenue	Net profit	non interest expense
Agriculture					
Rea Vipingo Ltd.	2011	1,414,243	211,606	467,196	211,650
Sasini Tea & Coffee Ltd.	2011	8,000,066	2,669,877	450,347	563,792
Limuru Tea	2011	19,043	102,504	40,484	19,365
Kapchorua Tea Co. Ltd	2011	1,167,195	1,404,794	187,005	81,388
Williamson Tea Kenya	2011	2,754,040	3,284,909	409,305	408,302
Eaagads Ltd	2011	218,174	16,830	11,156	6,750
Kakuzi Ltd.	2011	2,872,203	2,376,860	648,388	294993
Commercial and Services					
Marshalls E.A. Ltd.	2011	1,436,207	117,479	57,748	329,984
Car & General Ltd.	2011	3,204,878	1,793,900	911,638	221,552
Kenya Airways Ltd.	2011	76,037,020	5,664,000	1,827,573	37,081,000
CMC Holdings Ltd.	2011	2,190,951	807,283	484,477	338,558
Nation Media Group Ltd.	2011	6,575,622	1,617,400	1,176,689	89,300
TPS (Serena) Ltd.	2011	6,995,489	520,002	382,930	1,943,771
Standard Group Ltd.	2011	3,002,895	376,493	247,619	891,572
Express Ltd	2011	2,525,126	225,916	118,920	389,913
Banks and insurance					
Barclays Bank of Kenya Ltd.	2011	164,876,000	17,632	16,336	1,296
Housing Finance Ltd.	2011	18,239,359	3,464,079	1,901,562	1,562,517
Centum Investment Ltd.	2011	6,398,081	475,653	376,587	67,171
Kenya Commercial Bank Ltd.	2011	195,011,548	28,501,387	4,616,241	23,885,146
National Bank of Kenya Ltd.	2011	51,404,408	3,422,862	1,546,113	1,929,755
Pan Africa Insurance Holdings Co. Ltd	2011	7,563,815	3,732,267	173,647	2,099,178
Diamond Trust Bank of Kenya Ltd.	2011	66,679,080	3,041,672	1,929,862	1,085,191
Jubilee Insurance Co. Ltd	2011	23,736,372	3,516,778	1,115,776	438,019
Standard Chartered Bank Ltd.	2011	123,778,972	12,011,253	5,836,821	2,064,022
NIC Bank Ltd.	2011	47,558,241	6,831,580	4,279,488	2,997,786
Equity Bank Ltd.	2011	100,812,000	5,279,294	3,694,921	2,056,671
Olympia Capital Holdings Ltd	2011	511,767	61,945	46,587	36,170
Industrial and Allied					
Athi River Mining Ltd.	2011	12,132,107	948,714	559,028	4,658,399
BOC Kenya Ltd.	2011	1,017,943	231,682	178,535	454,607
British American Tobacco Kenya Ltd.	2011	10,376,647	2,108,964	1,694,921	1,248,055
Carbacid Investments Ltd. .	2011	669,273	2,525,633	1,871,811	142,237
E.A. Cables Ltd.	2011	3,540,261	726,444	497,823	635,519
E.A. Breweries Ltd.	2011	35,850,167	11,989,258	8,416,342	2,746,441
Sameer Africa Ltd.	2011	930,329	221,464	144,483	117,044
Mumias Sugar Company Ltd.	2011	17,477,844	1,193,161	903,983	975,907
Unga Group Ltd.	2011	5,569,106	260,439	120,662	334,142
Bamburi Cement Ltd.	2011	32,094,520	9,596,000	7,236,005	6,227,000
Crown berger (K) Ltd.	2011	1,862,341	139,818	83,582	97,860
E.A Portland Cement Co. Ltd.	2011	12,053,583	1,881,678	920,873	4,426,723
Kenya Power & Lighting Co. Ltd	2011	70,611,963	4,782,433	3,990,543	2,461,017
Total Kenya Ltd.	2011	31,601,321	733,699	533,596	3,978,000
Eveready East Africa Ltd.	2011	999,964	741,568	316,281	469,496
A. Baumann & Company	2011	253,312	15,799	-7,394	5,935
KenyaOchards	2011	1,276,950	132,911	82,930	29,984

Sector\Firm	Year	Total Assets	Total revenue	Net income	Noninterest expense
Agriculture					
Rea Vipingo Ltd.	2010	1,633,460	1,441,668	67,355	36,555
Sasini Tea & Coffee Ltd.	2010	6,796,198	2,266,406	935,202	415,201
Kakuzi Ltd.	2010	2,660,669	2,113,774	385,377	404,301
Limuru Tea	2010	17,243	123,859	74,840	29,488
Eaagads Ltd	2010	216,752	42,960	22,811	38,511
Williamson Tea Kenya	2010	3,623,534	2,723,187	876,055	347,226
Kapchorua Tea Co. Ltd	2010	981,722	1,130,108	139,252	60,286
Commercial and Services					
Marshalls E.A. Ltd.	2010	1,208,104	169,688	113,319	449,880
Car & General Ltd.	2010	2,744,780	321,565	147,040	208,038
Kenya Airways Ltd.	2010	76,798,760	5,513,000	2,159,610	3,679,400
CMC Holdings Ltd.	2010	12,054,071	1,328,849	744,068	240,868
Nation Media Group Ltd.	2010	6,610,765	1,910,300	1,771,591	131,200
TPS (Serena) Ltd.	2010	6,508,425	330,014	276,587	1,738,714
Standard Group Ltd.	2010	2,689,994	428,774	251,312	842,960
Express Ltd	2010	2,247,040	52,864	19,140	78,979
Banks and insurance					
Barclays Bank of Kenya Ltd.	2010	168,510,000	17,131	15,674	1,457
Housing Finance Ltd.	2010	14,294,368	2,475,814	1,400,988	1,074,826
Centum Investment Ltd.	2010	8,146,143	985,280	747,861	26,039
Kenya Commercial Bank Ltd.	2010	191,211,586	23,109,793	19,645,325	3,464,468
National Bank of Kenya Ltd.	2010	42,695,700	3,118,207	2,002,833	1,612,990
Pan Africa Insurance Holdings Co. Ltd	2010	6,094,129	3,432,080	1,903,726	1,826,155
Diamond Trust Bank of Kenya Ltd.	2010	56,145,697	2,745,951	2,073,700	959,309
Jubilee Insurance Co. Ltd	2010	20,202,824	3,059,824	2,660,220	92,467
Standard Chartered Bank Ltd.	2010	99,019,571	9,777,689	5,376,191	1,667,318
NIC Bank Ltd.	2010	42,619,119	4,757,544	3,213,651	2,605,088
Equity Bank Ltd.	2010	78,879,000	5,601,439	4,717,081	1,508,064
Olympia Capital Holdings Ltd	2010	500,720	34,875	21,550	76,798
Industrial and Allied					
Athi River Mining Ltd.	2010	6,347,257	705,450	686,169	2,382,004
BOC Kenya Ltd.	2010	919,958	295,179	129,172	603,119
British American Tobacco Kenya Ltd.	2010	10,304,789	2,416,913	1,718,047	1,013,524
Carbacid Investments Ltd. .	2010	1,071,603	2,506,467	1,863,391	146,750
E.A. Cables Ltd.	2010	3,043,397	669,927	503,618	488,078
E.A. Breweries Ltd.	2010	33,278,212	12,316,332	9,083,267	2,269,487
Sameer Africa Ltd.	2010	6,300,573	165,522	90,478	128,528
Mumias Sugar Company Ltd.	2010	14,158,660	1,589,204	913,768	1,712,983
Unga Group Ltd.	2010	4,760,910	564,016	324,277	259,438
Bamburi Cement Ltd.	2010	28,194,120	4,889,000	2,322,788	2,170,000
Crown berger (K) Ltd.	2010	1,952,436	77,781	23,645	96,002
E.A Portland Cement Co. Ltd.	2010	9,070,216	715,889	512,909	650,221
Kenya Power & Lighting Co. Ltd.	2010	59,797,115	2,738,309	1,101,894	1,412,457
Total Kenya Ltd.	2010	14,554,316	1,031,368	950,843	902,908
Eveready East Africa Ltd.	2010	836,886	27,855	22,107	86,765
A. Baumann & Company	2010	230,906	94,479	42,138	58,511
KenyaOchards	2010	1,111,299	116,725	61,107	49,880

Sector\Firm	Year	Total Assets	Total revenue	Net income	Noninterest expense
Agriculture					
Rea Vipingo Ltd.	2009	1,166,763	1,371,090	148,949	65,117
Sasini Tea & Coffee Ltd.	2009	3,826,192	2,182,090	533,032	381,202
Kakuzi Ltd.	2009	2,371,746	2,008,157	388,586	304,499
Limuru Tea	2009	26,684	91,130	26,969	11,762
Kapchorua Tea Co. Ltd	2009	947,655	743,079	69,908	29,827
Eaagads Ltd	2009	245,483	28,921	15,738	4,428
Williamson Tea Kenya	2009	3,133,474	1,489,982	109,870	35,471
Commercial and services					
Marshalls E.A. Ltd.	2009	1,257,800	142,321	97,066	60,090
Car & General Ltd.	2009	2,045,490	257,446	162,925	189,960
Kenya Airways Ltd.	2009	77,226,570	5,975,000	4,155,862	4,108,400
CMC Holdings Ltd.	2009	9,308,870	879,236	753,314	256,508
Nation Media Group Ltd.	2009	5,904,414	1,601,600	1,125,316	267,200
TPS (Serena) Ltd.	2009	6,778,670	617,380	510,201	177,465
Standard Group Ltd.	2009	2,207,221	413,120	235,852	70,917
Express Ltd	2009	1,229,265	112,380	80,157	12,362
Banks					
Barclays Bank of Kenya Ltd.	2009	157,655,668	17,517	14,770	2,747
Housing Finance Ltd.	2009	10,369,255	1,804,112	1,147,543	646,579
Centum Investment Ltd.	2009	8,422,008	1,185,778	916,110	73,363
Kenya Commercial Bank Ltd.	2009	120,479,553	17,968,455	14,468,721	3,499,734
National Bank of Kenya Ltd.	2009	41,414,272	2,733,201	1,354,852	289,024
Pan Africa Insurance Holdings Co. Ltd	2009	5,901,463	3,867,619	2,641,375	190,510
Diamond Trust Bank of Kenya Ltd.	2009	35,997,571	2,002,037	1,335,713	912,895
Jubilee Insurance Co. Ltd	2009	17,942,462	3,136,456	2,631,995	179,307
Standard Chartered Bank Ltd.	2009	91,121,942	9,347,475	4,732,754	1,364,669
NIC Bank Ltd.	2009	31,281,018	4,425,440	2,414,064	2,314,285
Equity Bank Ltd.	2009	53,129,246	4,539,715	3,378,520	1,059,132
Olympia Capital Holdings Ltd	2009	325,131	260,090	142,675	106,687
Industrial and Allied					
Athi River Mining Ltd.	2009	4,505,342	620,640	485,887	166,635
BOC Kenya Ltd.	2009	1,860,189	399,769	269,929	62,531
British American Tobacco Kenya Ltd.	2009	9,281,857	2,049,596	1,859,438	1,032,190
Carbacid Investments Ltd. .	2009	919,343	2,452,291	1,002,404	199,670
E.A. Cables Ltd.	2009	3,206,272	597,486	383,748	671,922
E.A. Breweries Ltd.	2009	53,011,124	10,635,771	7,742,910	2,051,597
Sameer Africa Ltd.	2009	3,445,559	166,520	92,439	151,947
Mumias Sugar Company Ltd.	2009	11,924,045	1,909,894	1,131,910	196,583
Unga Group Ltd.	2009	3,723,169	156,665	117,890	50,571
Bamburi Cement Ltd.	2009	20,722,600	5,443,000	3,101,068	2,422,000
Crown berger (K) Ltd.	2009	1,522,921	140,293	75,474	102,678
E.A Portland Cement Co. Ltd.	2009	8,940,111	1,112,625	956,679	389,622
Kenya Power & Lighting Co. Ltd.	2009	47,378,524	2,648,691	1,833,229	722,646
Total Kenya Ltd.	2009	12,516,693	781,935	403,938	384,343
Eveready East Africa Ltd.	2009	1,189,419	179,505	115,141	101,757
A. Baumann & Company	2009	155,164	13,059	5,473	16,667
KenyaOchards	2009	1,032,081	124,699	93,436	60,905

Sector\Firm	Year	Total Assets	Total revenue	Net income	Non interest expense
Agriculture					
Rea Vipingo Ltd.	2008	1,066,042	1,356,427	168,153	59,066
Sasini Tea & Coffee Ltd.	2008	3,831,538	1,455,575	885,204	381,202
Kakuzi Ltd.	2008	2,292,944	1,504,192	206,603	232,349
Limuru Tea	2008	27,777	69,558	8,466	6,768
Eaagads Ltd	2008	203,564	157,075	115,396	14,373
Kapchorua Tea Co. Ltd	2008	1,034,277	574,997	-69,778	33,303
Williamson Tea Kenya	2008	5,481,984	1,095,341	50,677	68,580
Commercial and Services					
Marshalls E.A. Ltd.	2008	1,085,248	534,850	317,352	60,861
Car & General Ltd.	2008	1,431,411	176,815	117,246	160,461
Kenya Airways Ltd.	2008	69,316,470	6,960,000	5,128,759	1,362,180
CMC Holdings Ltd.	2008	7,820,183	559,036	322,549	409,723
Nation Media Group Ltd.	2008	5,290,372	1,150,800	943,799	358,900
TPS (Serena) Ltd.	2008	6,140,073	498,605	113,619	207,753
Standard Group Ltd.	2008	1,290,214	304,507	176,959	173,964
Express Ltd	2008	1,768,261	102,508	91,456	13,370
Banks					
Barclays Bank of Kenya Ltd.	2008	117,722,000	17,821	14,010	3,810
Housing Finance Ltd.	2008	9,133,831	1,319,408	830,718	488,690
Centum Investment Ltd.	2008	6,430,230	696,489	416,396	40,604
Kenya Commercial Bank Ltd.	2008	92,526,571	14,745,585	11,777,117	2,970,468
National Bank of Kenya Ltd.	2008	36,122,843	2,663,204	1,189,176	105,798
Pan Africa Insurance Holdings Co. Ltd	2008	4,752,584	3,850,217	2,510,937	925,096
Diamond Trust Bank of Kenya Ltd.	2008	21,737,391	1,985,233	1,002,579	663,324
Jubilee Insurance Co. Ltd	2008	15,356,375	3,146,248	2,197,452	76,708
Standard Chartered Bank Ltd.	2008	81,014,123	7,445,466	3,250,813	1,263,592
NIC Bank Ltd.	2008	26,062,413	3,747,301	2,015,222	1,680,279
Equity Bank Ltd.	2008	20,024,484	4,629,292	2,360,177	926,279
Olympia Capital Holdings Ltd	2008	158,010	231,960	103,870	106,687
Industrial and Allied					
Athi River Mining Ltd.	2008	4,257,578	1,438,211	1,059,793	179,814
BOC Kenya Ltd.	2008	1,707,159	333,705	150,200	69,191
British American Tobacco Kenya Ltd.	2008	7,764,229	1,746,526	1,165,799	760,959
Carbacid Investments Ltd. .	2008	789,479	2,181,358	1,380,313	240,643
E.A. Cables Ltd.	2008	1,908,250	422,812	360,523	333,311
E.A. Breweries Ltd.	2008	55,718,512	8,577,049	6,333,955	1,905,700
Sameer Africa Ltd.	2008	3,311,601	114,865	92,599	20,183
Mumias Sugar Company Ltd.	2008	11,861,648	2,219,889	1,554,636	215,541
Unga Group Ltd.	2008	3,589,766	142,427	118,813	89,098
Bamburi Cement Ltd.	2008	18,522,820	3,838,000	1,317,900	2,319,000
Crown berger (K) Ltd.	2008	1,536,272	80,350	67,931	11,648
E.A Portland Cement Co. Ltd.	2008	9,051,361	924,364	800,793	457,733
Kenya Power & Lighting Co. Ltd.	2008	38,670,930	2,497,983	1,732,381	604,355
Total Kenya Ltd.	2008	15,334,536	677,194	332,881	310,448
Eveready East Africa Ltd.	2008	919,049	234,036	163,418	82,900
A. Baumann & Company	2008	189,057	49,991	-12,177	16,188
KenyaOchards	2008	968,662	58,818	19,367	6,861

Appendix III: Data on Efficiency Ratio and Return on Assets

sector/firm	ROA						EFFICIENCY RATIO					
	2008	2009	2010	2011	2012	2013	2008	2009	2010	2011	2012	2013
AGRICULTURE												
Eaagads Ltd	0.157735812	0.12766003	0.0412346	0.33035058	0.1536099	0.361367	0.043545285	0.047492871	0.025356046	1.000207934	0.067993273	1.223417861
Kapchorua Tea Co.	0.231030985	0.13931136	0.1376066	0.05629291	0.0139077	0.03833334	0.261891005	0.174695819	0.18319798	0.21116778	0.030657765	0.091504059
Kakuzi	0.090103814	0.16383964	0.1448421	2.12592554	0.1134205	0.04622164	0.154467648	0.151631073	0.191269738	0.188919457	0.1806148	0.250608397
Limuru Tea Co.	0.304784534	1.01068056	4.340312	0.16021744	0.3181885	0.03833334	0.097300095	0.129068364	0.238077168	0.057935897	0.386054891	0.094820945
Rea Vipingo Plantations Ltd	0.56687823	0.07376946	0.1052401	0.14861985	0.0380305	0.17171362	0.091504059	0.040139743	0.896438547	0.124296289	0.091504059	0.079968001
Sasini Ltd	0.067465486	0.06411035	0.2417681	0.0511335	0.0397209	0.01101619	0.057918563	0.153106739	0.127507219	0.401069519	0.024600617	0.023685457
Williamson Tea Kenya Ltd	0.009244281	0.03506332	0.1418446	0.22574588	0.1179732	0.10637411	0.062610639	0.023806328	0.053345344	0.124110381	0.085590239	0.056188784
COMMERCIAL AND SERVICES												
Express Ltd	0.292423483	0.897562	0.567564	0.04020869	-0.291886	0.00072024	0.113790782	0.422214571	2.651218707	2.80887648	0.706456514	0.004374261
Kenya Airways Ltd	0.081909389	0.07717125	0.093799	0.54786	0.0460166	-0.1094822	0.907507847	0.737863474	0.646954737	0.123502982	0.074479006	0.109508396
Nation Media Group	0.073990482	0.07965084	0.0535708	0.28445326	0.0214382	0.03833334	0.195715517	0.687598326	0.667404317	6.546786723	0.004226253	0.861925832
Standard Group Ltd	0.04124571	0.05381389	0.0281204	0.02403531	0.0455911	0.06979199	0.732909866	0.291739647	0.181260625	0.419379573	0.109162874	0.023073548
TPS Eastern Africa (Serena) Ltd	0.178399364	0.08092432	0.0617275	0.22112635	0.2351041	0.04777205	0.311870003	0.166833167	0.068680312	0.055212069	0.080530988	0.044540022
Scangroup Ltd	0.018504503	0.19058894	0.2679858	0.17894718	0.0363358	0.06101648	0.416668505	0.287448573	5.268606786	3.738006777	0.042651517	0.044426103
Longhorn Kenya Ltd	0.137154767	0.07526565	0.0424968	0.05473956	0.0523652	0.03833334	0.571297212	0.171661987	1.965977415	2.368097149	0.022681364	0.104243196
Safaricom Ltd	0.051720872	0.10685473	0.0934247	0.08246009	0.0262869	0.19010227	0.130428845	0.11000178	1.494003481	1.725920254	0.577789419	0.225868037
Car and General (KENYA) Ltd	0.000119009	0.06520726	0.0085179	0.04709468	0.2022529	0.05497484	0.213792716	0.15681909	0.085050493	0.073502722	0.160869353	0.001913543
CMC Holdings Ltd	0.09094957	0.07583452	0.0897654	0.045673	0.0860503	0.03833334	0.370385809	0.358391829	0.434130351	0.45106275	0.252083766	0.094820945
Sameer Africa Ltd	0.064756004	0.11066783	0.0980098	0.10425597	0.0668121	0.09558247	0.058298121	0.061869085	0.02642802	0.141218493	0.457652766	0.1142854
Marshalls (E.A.) Ltd	0.127283621	0.10877572	0.0918055	0.05885937	0.0815546	0.03660687	0.201447959	0.194771003	0.149913415	0.838034514	0.027989377	0.059955266
BANKS and Insurance												
Barclays Bank Ltd	0.032920332	0.12009275	0.1027413	0.02367163	0.1498225	0.03687258	0.039725834	0.105745607	0.517281245	0.56378405	0.044317674	0.567568553
I&M Holdings Ltd	0.528330904	0.03271462	0.0469095	0.03007744	0.0981739	0.03523326	0.240271133	0.049257696	0.532084042	0.562440468	0.105600933	0.322589986
Diamond Trust Bank Kenya Ltd	0.046122324	0.44757969	0.3123869	0.02295759	0.0181493	0.0314121	0.334129042	0.455983081	0.349354013	0.356774498	0.207447015	0.429178395
Housing Finance Co Ltd	0.143097053	0.03710564	0.0369343	0.02894254	0.0833913	0.02220358	0.024380786	0.057168664	0.030219712	0.124551223	0.623254703	0.39714606

Kenya Commercial Bank Ltd	0.040126497	0.14669085	0.1316757	0.04700702	0.0910816	0.03669309	0.16971295	0.14599333	0.170522707	0.17184069	0.53177189	0.579550415
National Bank of Kenya Ltd	0.077322925	0.05193869	0.0542942	0.04715519	0.0423875	0.06091589	0.448397126	0.52295026	0.547569923	0.438812983	0.10814281	0.437238528
NIC Bank Ltd	0.11786456	0.07717345	0.075404	0.08998415	0.0300305	0.02674074	0.200090856	0.233303632	0.269227961	0.389573113	0.059394123	0.371120736
Standard Chartered Bank Ltd	0.657363458	0.06359059	0.0598015	0.0366516	0.0481784	0.04304283	0.459937058	0.410192626	2.20209319	0.583905077	0.061076273	0.23667132
Equity Bank Ltd	0.248919221	0.43882312	0.043038	0.09103166	0.0413075	0.06895367	0.125026161	0.268488979	3.376573818	4.910224789	0.433465199	0.317185558
Jubilee Holdings Ltd	0.087982432	0.10784686	0.1081048	0.04607839	0.028028	0.0542708	0.207341814	0.156417831	2.043231395	1.962202502	0.246979614	0.267631636
Kenya Re-Insurance Corporation Ltd	0.150150002	0.14510837	0.1404108	0.17538801	0.0496781	0.17438975	0.435698638	0.503606564	0.419346497	0.591785825	0.231635188	0.076416278
Liberty Kenya Holdings Ltd	1.748384694	0.20033039	0.1667232	0.16333995	0.0345504	0.1246075	0.110317976	0.081421821	0.058548547	0.056317367	0.142708567	0.719695274
Industrial and Allied												
Olympia Capital Holdings Ltd	0.1889286	1.09034822	1.7388818	2.79678248	0.1177862	0.03833334	0.788319631	1.124581999	0.728554007	0.8748355	0.015958505	0.230323094
Centum Investment Co Ltd	0.113677749	0.11968666	0.1654789	0.1406176	0.046215	0.22247933	0.222185976	0.192895936	0.184266468	0.229075144	0.047774633	0.282424861
Trans-Century Ltd	0.027962004	0.14606199	0.2729494	0.23476437	0.0992058	0.10323172	0.175710617	0.912484987	0.776501009	0.528501246	0.267710788	0.162972231
East African Breweries Ltd	0.131064081	0.02682845	0.0143603	0.15530312	0.4094614	0.02627621	0.097095395	0.102928749	1.07788742	0.81791728	0.04052563	0.212492471
Eveready East Africa Ltd	0.033097701	0.09492668	0.0645377	0.05172165	0.1945803	0.11859994	0.62556959	0.322797051	0.459983405	1.28299525	0.158564171	0.127917205
Mumias Sugar Co. Ltd	0.071150073	0.03166389	0.0681124	0.02166631	0.0835478	0.04827609	0.604220948	0.444975198	0.443853549	0.648916215	0.053755888	0.175021249
Unga Group Ltd	0.044218081	0.14964667	0.0823855	0.22545921	0.3484712	-0.0831182	0.144965775	0.73188256	1.234260295	0.699909883	0.134184318	0.186990475
Athi River Mining	0.088472109	0.04955871	0.0121105	0.04488007	0.0928381	0.06108266	0.495186961	0.350182676	0.908270696	2.352540126	0.015997878	0.01967025
Bamburi Cement Ltd	0.044798018	0.10700975	0.0565487	0.07639828	0.0543184	0.0590113	0.241937195	0.272831372	0.515813592	0.514595186	0.013312021	0.045930422
Crown Berger Ltd	0.021707928	0.03869325	0.0184272	0.0565137	0.2488963	0.06544753	0.458432886	0.491528068	0.875446979	5.421841927	0.061188018	0.054320915
E. A. Cables Ltd	0.177812064	0.03227194	0.0653307	0.01688524	0.0591353	0.07172729	0.354219009	0.566875574	3.114880632	0.63311254	0.020444285	0.023182625
ENERGY AND PETROLEUM												
KenolKobil Ltd	0.192281945	0.09680441	0.0264158	-0.0291893	0.060904	0.01699789	0.345639	1.276284555	0.619301644	0.375656687	0.260686549	0.030716658
KenGen Ltd	0.064409146	0.03527236	0.1824898	0.06494381	1.1422945	0.0278266	0.323818287	0.488416106	0.427329193	0.225594571	0.139328923	0.596721218
Umeme Ltd	0.019993558	0.09053165	0.054987	0.01730128	0.0339035	0.09412356	0.116647965	0.007147578	0.047322608	0.046563035	0.170022842	0.032725793