THE RELATIONSHIP BETWEEN CAPITAL BUDGETING TECHNIQUES AND FINANCIAL PERFORMANCE OF BANKS LISTED AT THE NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION

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

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This project report has been submitted for examination with my approval as a University Supervisor

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DEDICATION

This project is dedicated to my dear parents Mr. & Mrs. Kinyumu for the source of inspiration they have been in my life. It is also dedicated to my brothers Samuel, Emmanuel, Farrel & Jesse as well as my beloved Purity & all who look up to me; may this project inspire & motivate you to always endeavor to achieve the best that is set out for you.

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ABSTRACT

This study overall agenda was to examine the capital budgeting techniques used in investment appraisal among banks listed in the Nairobi Securities Exchange. It sought out to establish the techniques of capital budgeting specifically used by the banks listed at the Nairobi Securities Exchange to undertake their firm's investments and also to establish the relationship between the applied capital budgeting techniques and the financial performance of banks listed in the Nairobi Securities Exchange. The objective of this study arose due to the inconsistent research findings both elsewhere and in Kenya as well as the banking sector being an important industry in the determination of the Kenyan economy. The research adopted a correlational cross-sectional survey research design which is best suited for explaining or exploring the existence of two or more variables at a given point in time. The population of the study consisted of all the ten banks listed at the Nairobi Securities Exchange. Data was collected from the primary sources which comprised of the questionnaires administered to the officers directly involved in capital budgeting at the banks as well the secondary sources which comprised of the data derived from the published accounts of the banks. The data was analyzed using the regression analysis model to test the effect of the capital budgeting techniques on the financial performance of the banks. The study found out that all of the four capital budgeting techniques researched on; payback period, net present value, accounting rate of return and internal rate of return were being used by banks listed in the Nairobi Securities Exchange and results depicted that there was no correlation between the financial performance of banks and the capital budgeting techniques employed. The study concluded that payback period, net present value, accounting rate of return and internal rate of return capital budgeting techniques were all adopted by the banks listed at the Nairobi Securities Exchange and that there was no significant relationship between the capital budgeting techniques employed and the financial performance of the same. The study recommends staff awareness trainings on the investment appraisal techniques employed by the firm(s) be done regularly so as to properly put them to use as well as more trainings pertaining specifically to the management on the financial literacy of banks. The study suggests further research be conducted on other sectors across the Kenyan market to establish whether the results obtained were homogeneous as well as using a different financial performance variable(s) to test the same relationship. Researchers could also in future endeavor to use larger samples than the one used in this study to depict whether the results established would hold or differ as a result of expanding the sample size.

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ABBREVIATIONS & ACRONYMS

AP	Accounting Profits
ARR	Accounting Rate of Return
CBA	Cost Benefit Analysis
CEO	Chief Executive Officer
DCF	Discounted Cash Flow
EPS	Earnings per Share
FIOs	Future Investment Opportunities
IPO	Initial Public Order
IRR	Internal Rate of Return
MFIs	Micro Finance Institutions
MIRR	Modified Internal Rate of Return
MSE	Micro and small Enterprise
NOI	Net Operating Income
NSE	Nairobi Securities Exchange
PBP	Pay Back Period
PI	Profitability Index
PV	Present Value
ROA	Return on Assets
ROCE	Return on Capital Employed
ROI	Return on Investment
SMEs	Small and Medium Enterprises
SSPS	Statistical Package for Social Science
UK	United Kingdom
UN	United Nations
UoN	University of Nairobi
USA	United States America
WACC	Weighted Average Cost of capital

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Pandey (2010) states that capital budgeting decision is an important decision for the firms' survival and profitability hinges on capital expenditures, especially the major ones. Capital budgeting decisions are crucial to firm's success for several reasons. First, capital budgeting expenditures typically require large outlays of funds. Second, firms must ascertain the best way to raise and repay the funds. Third, most capital budgeting decisions require a long-term commitment. Finally, the timing of capital budgeting decision is important. When large amounts of funds are raised, firms must pay close attention to the financial markets because the cost of capital is directly related to the current interest rate.

Gitman (2011) defines capital budgeting as the process of evaluating and selecting long term investments that are consistent with the business's goal for maximizing owner wealth. Firms make a variety of long-term investments but the most common are those in fixed assets commonly referred to as earning assets. Every organization that embarks on this process must take the necessary steps to ensure that their decisions making criteria supports the business's strategy and enhances its competitive advantage over its rivals.

Locally Munyao (2010) depicted capital budgeting as the process of evaluating and selecting long term investments to maximize shareholders wealth whereas Kadondi (2002) established that the companies she studied used capital budgeting as a strategy for achieving competitive edge and that CEOs have an influence on the choice of capital technique a company adopts.

1.1.1 Capital Budgeting Techniques

Bringham & Besley (2002) identified several basic methods used by firms to evaluate and decide whether projects should be accepted for inclusion in the capital budget. The majorly used methods are payback period, net present value and internal rate of return. The PBP method is a non-discounting method technique as it does not factor in time value of money. NPV and IRR factor in time value of money hence referred to as discounting techniques.

Kadondi (2002) established the use of capital budgeting techniques in Kenya stating that small companies use IRR and PBP methods while large companies with high net profit margins use NPV, IRR and PBP methods.

1.1.2 Financial Performance

Klammer (1973) referred to financial performance as the business results that are related to a firm's financial health such as revenues, expenses and profits. It is the measuring the results of a firm's policies and operations in monetary terms and are reflected in the firm's return on investment, return on assets or the value added. Financial performance can be measured using accounting information or stock market values in the capital budgeting scenarios. However, Munyao (2010) depicted it could be cumbersome to measure financial performance using information on stock price due to the lack of information on investment practices available to shareholders, the impact changes in capital budgeting practices have on accounting returns and managers preference on return on capital and profit growth than shareholders goals. Hence superiority in performance can be better measured using accounting information.

According to Chai (2011), ratios are normally employed when using the accounting information. Some accounting ratios used to measure profitability include return on assets (ROA) and return on capital employed (ROCE). ROA establishes how profitable a firm is relative to its total assets and depicts how efficient management is at using available assets to generate its earnings. It is the ratio of a firm's annual earnings to its total assets and overcomes the stock market price limitations. Thus this study will employ ROA to measure the operating efficiency of the banking industry at the NSE.

1.1.3 Effect of Capital Budgeting Techniques on Financial Performance

Munyao (2010) suggested that sophisticated capital budgeting procedures can under the assumption of economic rationality be regarded as a means a firm uses in order to fulfill its objective of shareholders wealth maximization. This fact indicates that firms can increase or maximize their shareholders wealth by using sophisticated appraisal techniques. Thus from a

finance theory perspective, it is expected that the relationship between sophisticated capital appraisal techniques and financial performance is positive. Studies on the relationship between capital budgeting techniques and financial performance have depicted varied outcomes.

In his study, Klammer (1973) established that despite the growing adoption of sophisticated capital appraisal methods in the U.S., there was no consistent significant association between financial performance and capital budgeting techniques. Chai (2011) established that the profitability index was highly related to the capital budgeting technique used in his study in the courier companies in Kenya.

1.1.4 The Banking Industry in the Nairobi Securities Exchange (NSE)

According to Nairobi Securities Exchange (2013), the Banking Industry in Kenya is governed by the Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK). The banking sector was liberalized in 1995 and exchange controls lifted. Players in this sector have increased innovations among the players and new entrants into the market.

The banking sector profit before tax increased by 20.6% from Shs. 89.5 billion in December 2011 to Shs. 107.9 billion in December 2012, according to CBK annual supervision report, underpinning the increased demand for bank shares at the NSE. Bank shares outperformed the NSE 20-Share index in the one year to May 2013 reflecting investors' confidence in the potential of the sector to maintain its robust growth momentum and currently there are ten banks listed in the NSE (Nairobi Securities Exchange, 2013).

1.2 Research Problem

Brealey & Myers (2010) referred to investment and financing decisions and their interactions as the corporate financial principles addressed by financial managers to help them in providing accurate answers to the two fundamental preoccupations of the investments the firm should make and how it should pay for the investments. Brealey & Myers (2010) qualified that that was the secret of success in financial management.

In principle, a firm's decision to invest in a new project should be made according to whether the project increases the wealth of the firm's shareholders. As Graham & Harvey (2001) document, this rule has steadily gained in popularity since Dean (1951) formally introduced it, but its widespread use has not eliminated the human element in capital budgeting because the estimation of a project's future cash flows and the rate at which they should be discounted is still a relatively subjective process, the behavioral traits of managers still affect this process.

Njiru (2008) indicated that the commercial parastatals preferred IRR, NPV and PBP in order of usage. He stated that the amount of funds required for investment, size of organization, government policy and industrial practices mainly influence the choice of the appraisal technique. This raises the concern to identify whether these appraisal techniques are applicable by SMEs, to what extent and whether those techniques would have an impact to the firms.

Munyao (2010) found out that the four capital budgeting techniques; PBP, ARR, NPV and IRR were used by companies listed in the NSE. He established there was a significant positive relationship between the techniques and corporate performance as measured by the return on assets. He however recognized that little or no research had been conducted to establish whether the case would apply for companies outside NSE. He endorsed the need to test the relationship between capital budgeting techniques and firm performance by use of EPS.

Klammer (1973) depicted no significant constant association between financial performance and capital budgeting techniques in the US, Munyao (2010) established a significant positive relationship between the two variables in companies listed at the NSE whereas Chai (2011) established a positive relationship in the courier companies in Kenya. This raised the concern as to how capital budgeting and financial performance correlate with each other in different industries and segments under different economic conditions. Due to the importance and representativeness of the banking sector in financial matters in any macro-economic status of a country, it would be essential to establish the relationship between capital budgeting techniques and the financial performance of the banking industry. This then begged the questions: which capital budgeting techniques had the banking industry in Kenya adopted and what was the association between those techniques and financial performance.

1.3 Research Objectives

i. To establish the capital budgeting techniques adopted by banks listed at the Nairobi Securities Exchange.

ii. To establish the relationship between capital budgeting technique(s) employed and the firms' financial performance in the banks at the Nairobi Securities Exchange.

1.4 Value of the Study

This study will help managers in the banking industry evaluate their current companies' capital budgeting practices as well as establish the relationship between the capital budgeting techniques employed and the firms' financial performance. To achieve this, the company will possibly need the most reliable tool to assist in investment decision making and hence shareholders' wealth maximization.

This study will be significant to academicians/researchers with special interest in the banking sector as it will divulge information regarding capital budgeting techniques and the association they have with financial performance. It will also appreciate that techniques taught in class cannot just be implemented directly without considering their effect on firm performance. Furthermore, researchers who may wish to carry out further research in capital budgeting for other industries both within and without the NSE may use this study as their basis and add more to the existing body of knowledge.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter discussed the literature review used in the study. Section 2.2 analyzed the theoretical review; section 2.3 established the evolution of appraisal techniques. Section 2.4 dug deep into the capital appraisal techniques available while section 2.5 detailed the performance measures. Section 2.6 analyzed the empirical review and section 2.7 summarized both the critical review as well as the literature review.

2.2 Theoretical Review

There are several theoretical perspectives pertaining to the study of capital budgeting techniques. However, for the purposes of this study, the researcher considered four theories namely the q theory of investment, contemporary, real options and conventional capital budgeting theories.

2.2.1 "q" Theory of Investment

Yoshikawa (1980) described the rate of investment as the speed at which investors wish to increase the capital stock should be related to "q" which the value of capital relative to its replacement cost. Economic logic indicates that a normal equilibrium value for "q" is one for reproducible assets which are in fact being reproduced, and less than one for others. Values of "q" above one should stimulate investment, in excess of requirements for replacement and normal growth, and values of "q" below one discourage investment.

The "q" theory of investment has recently become quite popular despite the fact that there seems to be considerable confusion about how the theory is to be interpreted. For example, Robert Hall argued that the "q" theory is basically neo-classical and only incomplete information and delivery lags can account for "disequilibrium" values of "q" and for their relation to investment. Otherwise, investment would keep "q" equal to one. In spite of this, the "q" theory can be derived from a choice-theoretic framework which explicitly takes account of adjustment costs associated with investment (Yoshikawa, 1980).

2.2.2 Contemporary Capital Budgeting Theory

Graham & Harvey (2001) stated that in capital budgeting decisions, five important elements are considered: initial investment, operating cash flow, useful life of the project, salvage value and cost of capital. The closure of project implies the venture is to be dissolved and the firm must pay back the par value of bonds and common shares to the bond and stock holders respectively.

Depreciation is not accumulated from year to year to replace the capital asset but is instead added back to the NOI to increase operating cash flow for the investors. Initial investment includes but not limited to purchase price of capital asset, sales taxes, transportation and installation costs and working capital needs and is recovered through the operating cash flows from the project. The operating cash flow is the inflow of cash to investors from the project (Graham & Harvey, 2001).

2.2.3 Real Options Theory

Black & Scholes (1973) offered a standard pricing model for financial options. Together with Stewart Myers, they recognized that option-pricing theory could be applied to real assets and non-financial investments. To differentiate options on real assets from financial options traded in the market, Myers coined the term "real options", which has been widely accepted in academic and industry world.

Unlike the standard corporate resource allocation approaches, real options approach acknowledges the importance of managerial flexibility and strategic adaptability. Its superiority over other capital budgeting methods like discounted cash flow analysis has been widely recognized in analyzing the strategic investment decision under uncertainties (Luehrman, 1998).

2.2.4 Conventional Capital Budgeting Theory

Woods & Randall (1989) established that in capital budgeting, the NPV criterion is used to measure shareholders wealth which is the main objective in financial management. The riskiness of projects cash flows is equal to the firms' riskiness of other assets cash flows and the firms WACC is used to calculate NPV. Some future investment opportunities (FIOs) are acknowledged by the market due to the uncertainty regarding FIOs and risk perceptions.

Conventional Capital budgeting approaches are biased towards FIOs in the long term in potential opposition to shareholders interests. Therefore discounting ought to be done at the required return on equity (K_e) rather than WACC (K_a) to determine shareholders wealth attributable to FIOs. The ability to borrow on FIOs basis would increase shareholders wealth by quantifiable amount, if the management has a clear incentive to increase its credibility in the financial markets. When management is either unwilling to divulge information or unable to convince markets of future cash flows, a divergence will exist between the market value of shares and true shareholder wealth (Woods & Randall, 1989).

2.3 Evolution of Capital Budgeting Practices

In the period between 1930s and 1950s non-owner managed firms put in place capital budgeting control systems that identified planned capital investments going forward. The size of non-financial investments and the number of non-owner managed firms increased during the industrial revolution. These simultaneous changes created fertile ground for use of more sophisticated evaluation techniques and for the capital budgeting processes in use today (Chapman & Hopwood, 2007).

During the 1950s, practicing financial controllers began to network with each other, with consultants and with academicians to develop models for capital budgeting (Chapman & Hopwood, 2007). Dean (1951) advanced the implementation of Discounted Cash flows (DCF) methodology in its current form by enhancing a specific objective process by which firms can assess the value that new capital investments are expected to create.

Agency theory in the late 1970s and early 1980s gave rise to analytical models of capital investment process. These models suggest that current capital budgeting procedures are a means of reducing agency costs that emanate from the conflict of interest between owners of firms and management. A consistent capital budgeting method must be robust when correctly ranking and selecting superior investments in varying investment environments, remain theoretically sound by maintaining the assumption of wealth maximization, and be expressed as a yield based measure as preferred by corporate management (Chapman & Hopwood, 2007).

2.4 Capital Appraisal Techniques

2.4.1 Pay Back Period (PBP)

PBP is the number of years required to recover the original investment. It's the simplest and oldest method used to evaluate capital budgeting method. Using PBP to make capital budgeting decision is based on the concept that it's better to recover the cost of the project sooner rather than later. As a general rule a project is considered acceptable if its PBP is less than the maximum cost recovery time established by the firm. Its limitations are the failure to recognize the time value of money and cash flows beyond the payback period. PBP = Initial cash outlay / Annual cash inflows (Graham & Harvey, 2001).

Linstrom (2005) defined PBP as the expected time for the cumulative positive cash flows to equal the initial investment. A cut off period is predetermined beforehand and all investments that meet the cut off are acceptable whereas those failing are rejected. Due to its simplicity, it is readily accepted by many managers and saves on forecasting time

2.4.2 Net Present Value (NPV)

Bringham & Besley (2002) defined NPV as the method of finding the present value of future net cash flows discounted at the rate of return required by the firm. To implement this approach, we find the present value of all future cash flows a project is expected to generate and then subtract its initial investment to find the net benefit the firm will realize from investing in the project. If the net benefit computed on a present value basis positive, then the project is considered acceptable investment. The advantage of this method is that it recognizes the time value of money.

Kadondi (2002) stated that the discount rate that should equate the rate of return on the next best investment alternative of similar risks is also known as the opportunity cost of capital. The decision rule is to give considerations to investments who's NPV is greater than zero.

2.4.3 Internal Rate of Return (IRR)

IRR is defined as the discount rate that equates to a net present value of zero and is a commonly used measure of investment efficiency. It will result in the same decision as the NPV but is commonly misunderstood to convey the actual annual profitability of an investment (Chai, 2011).

IRR is the discount rate that equates the PV of the cash inflows with the initial investment associated with the project (Gitman, 2011). If IRR is greater than the rate of return required by the firm for such an investment, the project is accepted. The technique has two major limitations. First, when a project has unconventional cash flow patterns, there is a likelihood of getting multiple IRRs. This is because there is an IRR solution for each time the direction of the cash flows associated with a project changes. Secondly, for mutually exclusive projects, the technique can result in the acceptance of the lesser viable project (Mao, 1970). This is because the IRR method assumes that the interim cash flows are reinvested at the projects' discount rate.

$$IRR: \sum_{t=0}^{n} CF^{-t}/1 + IRR_t = \$0 = NPV$$

2.4.4 Accounting Rate of Return (ARR)

Munyao (2010) described ARR as the annual accounting profits from a capital project divided by a defined annual average capital investment outlay over the lifespan of a project. It is a non-discounting technique and but considers all accounting profits instead of cash flows over the life of a capital investment.

Kadondi (2002) depicts ARR as the average after tax profits divided by the initial investment. The higher the accounting rate the more preferable the investment is to a firm and evaluates projects on the basis of profitability. However the method does not factor in the time value of money.

2.5 Performance Measures

Traditional measures of corporate performance are many including; Return on Investment (ROI), Return on Assets (ROA), Return on Capital Employed (ROCE) and Cost Benefit Analysis (CBA) due to their simplicity and applicability.

2.5.1 Return on Investment

A popular measure of corporate performance, ROI is a calculation of the most tangible financial gain or benefit that can be expected from a project versus the cost for implementing the project. It is a ratio of the expected gains of a project to its total costs: ROI = Net Benefits ÷ Total Costs. Net benefits equals total benefits minus total costs (Munyao, 2010).

It is the incremental financial gain (or loss). ROI should be greater than zero for an investment to be economically attractive. Calculating the ROI on various options will help to ensure that a company selects the most economical and profitable project (Klammer, 1973).

2.5.2 Return on Assets

This indicates how profitable a company is relative to its total assets. ROA sheds an idea as to how efficient management is at using assets to generate earnings. It depicts what earnings were generated from invested capital assets (Munyao, 2010).

ROA for public companies can vary substantially and will be highly dependent on the industry. It is derived by dividing a company's annual earnings by its total assets as follows: ROA = Profits before interest and tax ÷ Total assets (Chai, 2011).

2.5.3 Return on Capital Employed

It is an operating ratio that can be used to assess corporate profitability. It is expressed as a percentage and can be revealing about the industry a company operates in, the skills of management and occasionally the general business climate. Analysis of potential investments

over a reasonable period of time will expose an investor to many types of business and industry (Klammer, 1973).

It is not true but as a rule, a firm with a high return on capital employed will probably be very profitable in business. ROCE = Trading Capital ÷ Capital Employed, Where: Capital employed = share capital + reserves + all borrowings (Munyao, 2010).

2.5.4 Cost Benefit Analysis

CBA is a practical way of evaluating the desirability of projects where it is necessary to take both wide and long views. It thus implies the enumeration and evaluation of all the available costs and benefits that are relevant and trying to weld these components into a coherent whole (Prest & Turvey, 1965).

Munyao (2010) depicted CBA applies to large public works projects which are difficult to quantify but have societal benefits. The tangible benefits are however relevant to the determination of what is good investment for the public as a whole. The result of CBA is a ratio expressed as a percentage.

2.6 Empirical Review

Mao (1970) recognized that there was a wide disparity between the capital budgeting theory and practice by analyzing the risk in investment decisions and the profitability criteria for investment selection. He however established that the theory and practice disparity in capital budgeting could be modified to make it more meaningfully operational by maximizing firms value as the main objective of investments decisions and improvising a criterion for choosing between time patterns of share prices. He confirmed the prevalent use of PBP and AP unlike the IRR and the NPV in the observed companies he did and the need to establish a reason behind the executives' choice and how to modify the IRR and NPV to make them more applicable.

Grinstein & Tolkowsky (2004) carried out a Survey in USA to determine the role of the board of directors in capital budgeting process. The sample consisted of "S&P 500" firms and covered the period from 1995 to 2000. Their final sample consisted of 2,262 firms after excluding financial institutions due to their special governance regulations and requirements and a further 292 firms for whose proxy statement information was not obtained. They used both univariate and multivariate data analysis methods in their survey. They found 17% of the board of directors of the sampled firms disclosed to having established committees with a capital budgeting role. The study revealed that board of directors have four main roles in capital budgeting including review of annual budgets, large capital expenditure requests, merger and acquisition proposals and performance of approved budgets. Some committees have an advisory role in capital budgeting process. The main finding of the study was that boards of directors have a dual role in capital budgeting process, which is the disciplinary and advisory role.

Pradeep & Quesada (2008) in a study on the use of capital budgeting techniques in businesses in the Western Cape Province of South Africa investigated a number of variables and associations relating to capital budgeting practices. The sample consisted of 600 firms but only 211 interviews were conducted successfully giving a response rate of 35%. A descriptive approach to the research finding was adopted. The study revealed 64% of the businesses surveyed used only one method of capital budgeting while 32% used between two and three different techniques to evaluate capital budgeting decisions. The more complicated methods such as NPV and IRR were favored by large businesses compared to small businesses.

Kadondi (2002) surveyed capital budgeting techniques used by companies listed at NSE, the objectives being to document the capital budgeting techniques used in investment appraisal by corporations in Kenya, to determine whether the techniques used conform to theory and practices of organizations in developed countries and to determine how firms and CEO characteristics influence the use of a particular technique. She intended to conduct the study on 54 companies listed at the NSE but the analysis included only 43 companies whose annual reports and accounts were available. Of these only 28 companies responded of which 50% were small companies and 50% large companies. The study found 31% of the companies used PBP,

27% used NPV while 23% used IRR. 71% of the respondents considered capital budgeting process a strategy for achieving competitive edge advantage. She also found that small companies use IRR and PBP methods while large companies with high net profit margins use NPV, IRR and PBP methods.

Brealey & Myers (2010) refer to investment and financing decisions and their interactions as the corporate financial principles addressed by financial managers to help them in providing accurate answers to the two fundamental preoccupations of the investments the firm should make and how it should pay for the Investments. They qualify that that is the secret of success in financial management.

In principle, a firm's decision to invest in a new project should be made according to whether the project increases the wealth of the firm's shareholders. The way capital budgeting is taught and practiced presents a paradox. Typically, students in corporate finance are taught that a project will increase the shareholder value if its NPV is positive. For investors with well diversified portfolios, only the project's systematic risk affects its value: its idiosyncratic risk should not be considered. Capital market imperfections such as costly external financing and bankruptcy costs are mostly ignored in teaching capital budgeting (Graham & Harvey, 2001).

2.7 Summary of Literature Review

Capital budgeting theory has concentrated mainly on improving the techniques for the evaluation of capital projects. Results of previous surveys (mainly in USA or UK based on large companies) show the gap between corporate finance theory and practice is closing and DCF techniques are used almost universally. Although capital budgeting has been studied widely and various recommendations made on the most preferable methods, a lot needs to be done. Real options though explored widely, has not been studied locally and this would form very good grounds for a local study. Further real options analysis should be conducted to explore the functions of open standard and technology interoperability in fostering IT investment.

Locally, studies conducted by earlier researches have shown that there exists a significant positive relationship between capital budgeting techniques and corporate performance as

measured by profitability. Studies also exhibit the fact that capital budgeting techniques have been embraced widely by many companies operating in the country. The relationship between capital budgeting techniques and financial performance across the different industries represented in the NSE has not been explored apart from the Courier. Studies ought to be done to depict whether the relationship has the same effect on the different industries in the NSE.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter discussed the research methodology applied in the study. Section 3.2 stated the research design; section 3.3 established the target population. Section 3.4 delved into the design of the sample whereas section 3.5 discussed the data collection technique(s). Section 3.6 detailed how data would be analyzed.

3.2 Research Design

The study employed a correlational cross-sectional survey research to determine from the members of the population the effect capital budgeting techniques have on the financial performance. A survey study aims at determining the current status of the said population with respect to one or more variables and is therefore a self-report study involving the collection of quantifiable information from the sample hence descriptive in nature. This was best suited for explaining or exploring the existing of two or more variables at a given point in time and will give the researcher an opportunity to collect relevant data to meet the objective(s) of the study. The research emulated similar studies that used this design such as Klammer (1973) and Moore & Reichert (1989).

3.3 Population

The target population of this study consisted of all the ten banks listed at the NSE (Nairobi Securities Exchange, 2012). The choice of quoted banks was preferred because they represent the main sectors of the Kenyan economy, and therefore considered as adequate representation of companies in Kenya. In addition since they are publicly quoted and publish their annual reports, information about their profitability will be readily available, unlike of those unlisted companies.

3.4 Data Collection

The data was collected both from the primary as well as the secondary sources from the ten banks listed in the NSE. Secondary data was derived from the published accounts of the banks

since it is verifiable and authentic and can be used to derive conclusive information as far as the companies are concerned. Is also time efficient and since data is readily available, it saved on costs of data collection. Primary data was obtained via questionnaires which were administered to banks specifically to officers directly involved in the day to day capital budgeting procedures to establish appraisal techniques employed by them. The questionnaires were closed and only open ended where necessary and formulated into three sections. Section 1 gathered information of the respondent so as to establish the identity. Section 2 gathered information on capital budgeting to establish those involved in budgeting decisions while section 3 concentrated on the use of capital budgeting to depict the preferred technique by each respective firm. The questionnaires were dropped and picked later in all the banks. The data collection procedures had been formerly employed by Munyao (2010) and Chai (2011).

3.5 Data Analysis

Data obtained was analyzed in general for banks listed at the NSE. Regression analysis was used to test the effect of capital budgeting techniques on the financial performance of banks. The study employed a model formerly used by Olawale et al, (2010), Munyao (2010) and Klammer (1973). The regression equation used was;

$$ROA = \alpha + \beta1\ NPV + \beta2\ ARR + \beta3\ PB + \beta4\ IRR + \varepsilon$$

Where:

ROA   = Return on Assets (Profitability)

α = constant (y intercept)

NPV   = the effect of a shilling in the Present Value technique

ARR   = the effect of a shilling in the Accounting Rate of Return technique

PB   = the effect of a shilling in the Payback technique

IRR   = the effect of a shilling in the Internal Rate of Return technique

β1, β2, β3, & β4 = Regression coefficients

ε   = Error term

The profitability index ROA was measured by the profits before interest and tax divided by the total assets in the firm. To derive NPV, the shilling effect inherent in the companies using the NPV technique was obtained. Similarly, the ARR, PB and IRR, were derived by obtaining the shilling effect attributable to the companies using these specific methods respectively. Once obtained, these factors were analyzed using descriptive statistics so as to derive an aggregated factor representative of the whole population. Alpha was the effect of shilling inherent in the market i.e. when profitability is zero. The regression coefficients depict the effect of one unit change of NPV, ARR, PB and IRR on the ROA.

The data was analyzed into a frequency distribution. Information then was generalized and summarized using tables and histograms where appropriate. Reliability measures used cronbach's alpha which allowed for different categories as used by Munyao (2002) and Chai (2011).

CHAPTER FOUR: DATA ANALYSIS & FINDINGS

4.1 Introduction

This chapter displayed the analysis and findings of the underlying objectives of the research study. The study sought to establish the existence of capital appraisal techniques in banks listed at the NSE and the relationship between them and firm financial performance. Data collected was presented in frequency tables, histograms and pie charts as well as narrations.

4.2 Data Presentation

4.2.1 Response Rate

Amongst the 10 questionnaires distributed to the banks by the researcher, only 7 were filled and collected back representing a response rate of 70% of the target population. This was a satisfactory rate to enable the research be analyzed and concluded.

4.2.2. Respondents Duration of Service

The proportion with the highest respondents who have worked for their respective banks lies between 1-5 years with 57.14%, closely followed by those who have worked for over 10 years at 28.57%. The lowest proportion of respondents has worked between 5-10 years with 14.29%.

Figure 4.2.2: Duration worked for the Bank
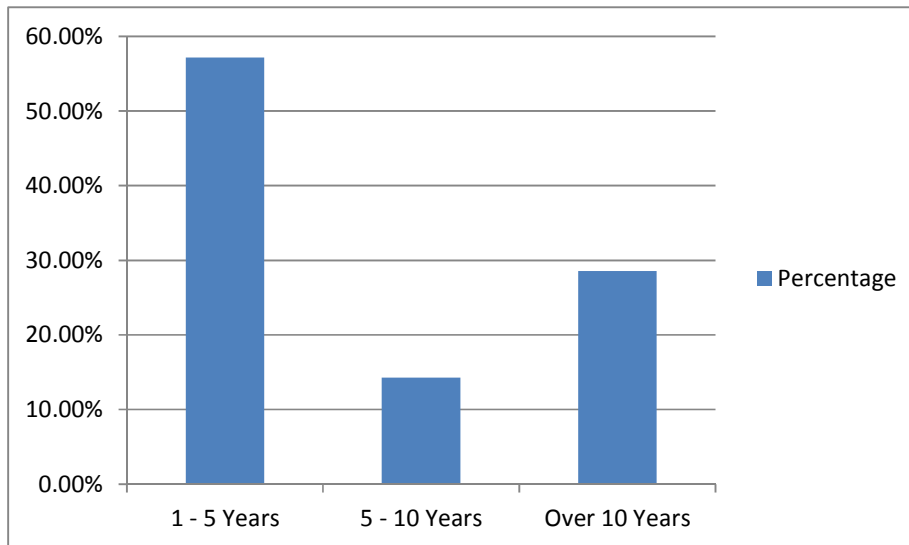
4.2.3. Respondents on Whether Banks are Foreign

A small proportion of 28.57% of the banks are foreign with the majority of the banks being non-foreign companies at 71.43%

Figure 4.2.3: Is the Bank Foreign
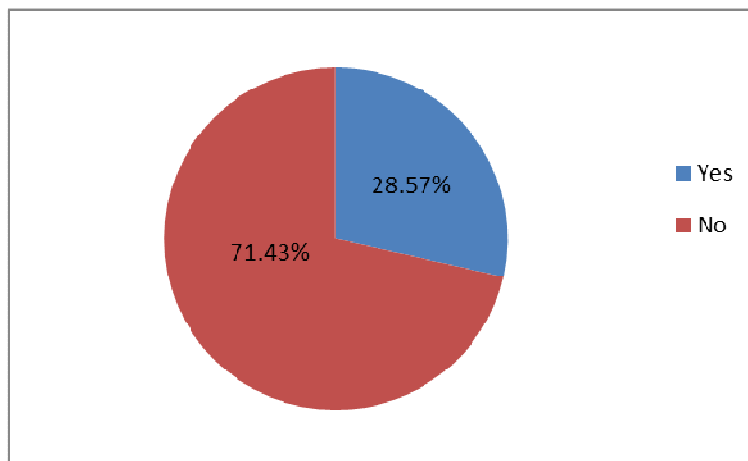
4.2.4. Respondents Ownership Status

Of the interviewed banks, 78.57% represented those owned by the public whereas the remaining 21.43% were privately owned.

Figure 4.2.4: Legal Ownership Status
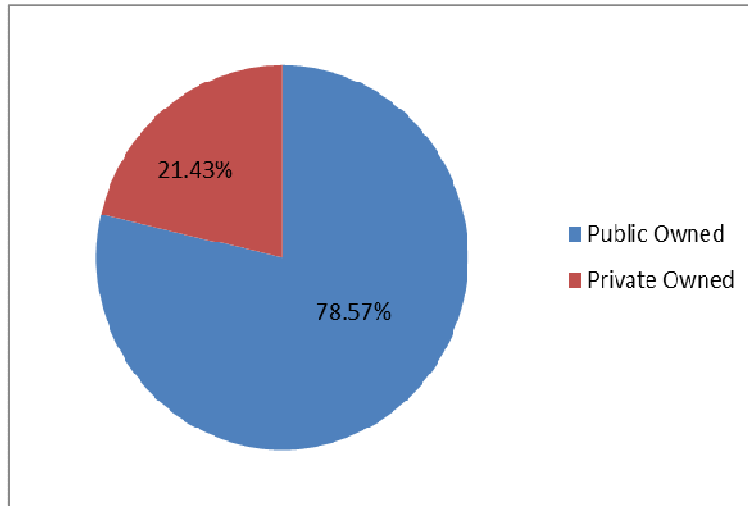
4.3. Respondents Information on Capital Budgeting

This was found out by analyzing whether the firms had the capital investment manual, how many staff were assigned to investment analysis and who produced the guidelines. It also shows the people originating with the capital budgeting proposal.

4.3.1. Respondents Existence of Capital Investment Manual

This was to depict whether the interviewed banks had a manual to guide them on capital investments. 5 respondents had a manual, 1 did not while 1 was not aware whether it existed representing a 71.43%, 14.29% and 14.29% respectively of the entire population.

Table 4.3.1: Existence of Investment Manual

	Frequency	Percentage
Yes	5	71.43%
No	1	14.29%
Not Aware	1	14.29%

Source (Raw Data by Researcher)

4.3.2. Respondents Staff Assigned Full time Capital Investments Analysis

Most of the respondents assign between 3-5 and over 5 full time staff to undertake their capital investment analysis representing 42.86% respectively. 14.29% of the respondents don't assign a single staff for such analysis whereas none of the respondents assign between 1-2 staff to do such analysis.

Table 4.3.2: Staff Assigned Capital Investments Analysis

Number of Staff	Frequency	Percentage
None	1	14.29%
1-2 staff	0	0.00%
3-5 staff	3	42.86%
Over 5 staff	3	42.86%

Source (Raw Data by Researcher)

4.3.3. Respondents Guidelines on Requests for Capital Expenditure

All of the respondents in the study assented to having guidelines on how requests for capital expenditure should be identified in their respective banks and hence representing the entire population of 100%.

Figure 4.3.3: Do Banks have guidelines on how requests for capital expenditure are identified
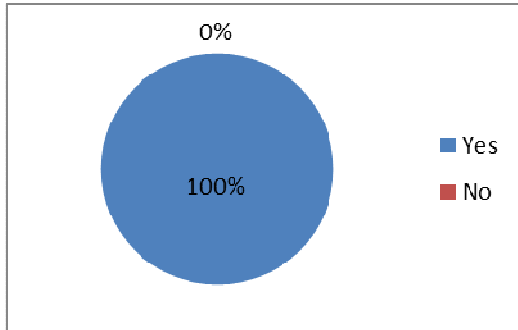
4.3.4. Respondents on Who Produces the Guidelines

All of the respondents in the study depicted that the executive management were solely involved in the production of the guidelines on how requests for capital expenditure were to be identified thus representing a whole population of 100%.

Figure 4.3.4: Who Produces the Guidelines?
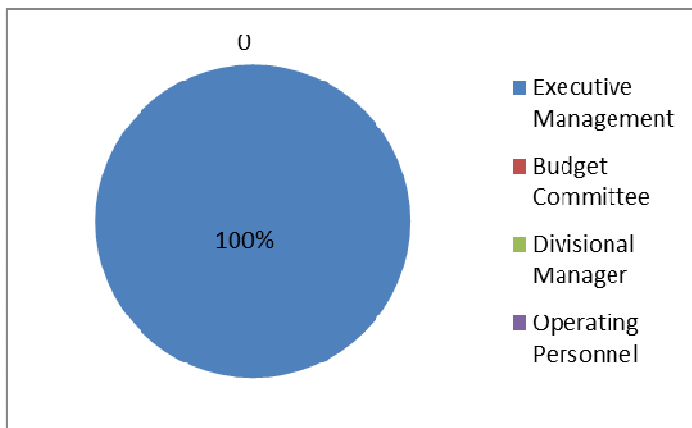
4.3.5. Respondents Origin of Capital Budgeting Proposal

57.14% of the respondents confirmed that the executive management originates with the capital budgeting proposal in their firms. The budget committee, divisional manager and operating personnel all shared equally each having a proportion of 14.29% of the population.

Figure 4.3.5: Origin of Capital Budgeting Proposal
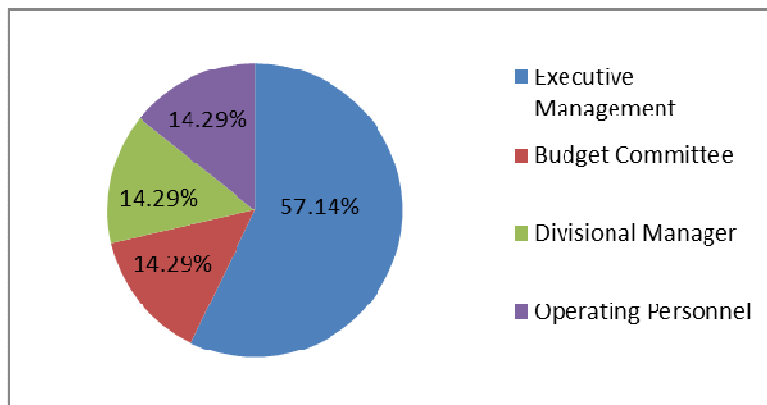
4.4. Respondents Use on Capital Budgeting Techniques

Data collected was used to establish the techniques employed by the banks and whether they would deviate from them at any one point. It also showed the assessment of risk and the difficulties faced in the process of capital budgeting.

4.4.1. Respondents Preference on the Investment Technique

There was no major disparity between the use of capital budgeting techniques apart from one. 33.33% of the respondents preferred using PBP, 44.44% preferred NPV while 22.22% preferred the use of IRR. None of the respondents preferred the use of ARR depicting that banks might have rejected its use.

Figure 4.4.1: Preference of Investment Technique
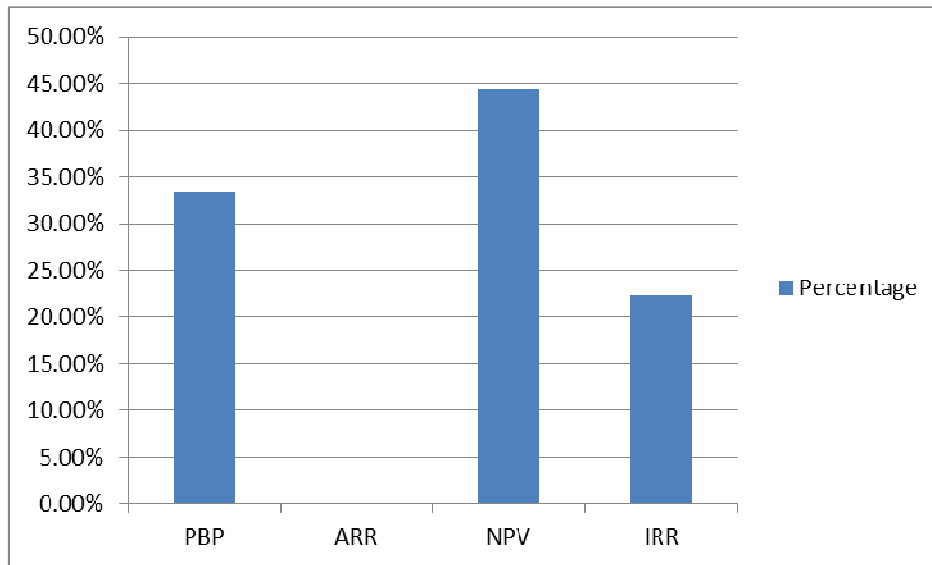
4.4.2. Respondents Switch from One Technique

14.29% of the respondents said there was a time the bank(s) changed from one budgetary technique to another. Majority of them have never changed the technique they have been using to the proportion of 57.14% whereas 28.57% were not aware whether such a switch has ever taken place.

Figure 4.4.2: Switch from One Budgetary Technique to Another
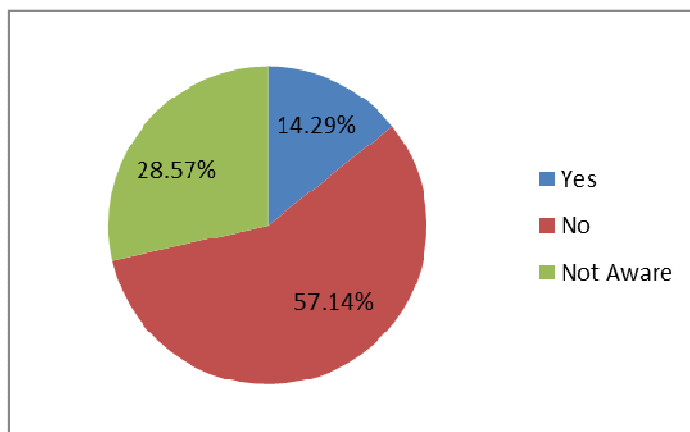
4.4.3. Respondents Use of Any Technique to Assess Risk

The entire population responded affirmatively to the use any technique to assess a project's risk.

4.4.4. Respondents Technique to Assess Project's Risk

Of the entire population, 42.86% used scenario analysis to assess a project's risk while 28.57% used sensitivity analysis. Decision trees and simulation analysis were not used at all whereas 28.57% of the respondents were not aware which technique was in use in their firm.

Table 4.4.4: Technique used to Assess Project's Risk

Technique	Frequency	Percentage
Scenario Analysis	3	42.86%
Sensitivity Analysis	2	28.57%
Decision Trees	0	0.00%
Simulation Analysis	0	0.00%
Not Aware	2	28.57%

Source (Raw Data by Researcher)

4.4.5. Respondents Approach to Determining Minimum Acceptable Rate of Return

28.57% of the respondents were not aware which approach is used by their bank(s) in determining acceptable rate of return. The same proportion of respondents said their firms used both cost of debt and cost of equity equally while only 14.29% used WACC.

Figure 4.4.5: Approach to Determine Acceptable Minimum Rate of Return
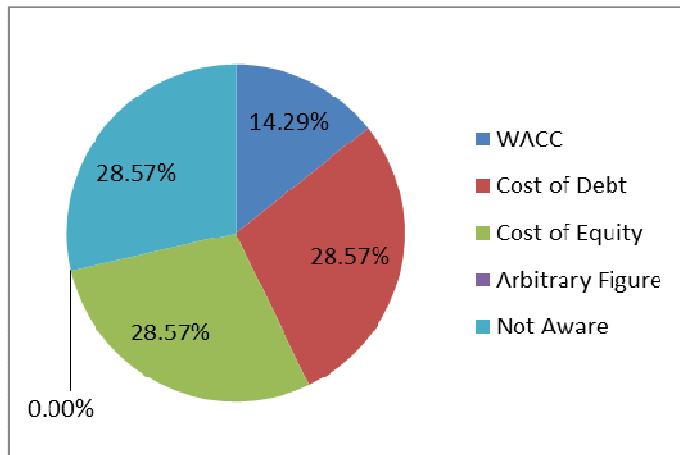
4.4.6. Respondents Difficulties Faced in Capital Budgeting Process

Each of the estimating cash flows and determining discount rate difficulties had a proportion of 14.29% individually while incorporating risk ranked highly with a 71.43%. It so seems that the business of banks in lending loans have a difficulty in dealing with the risky day to day loans.

Figure 4.4.6: Difficulties Faced in Capital Budgeting Process
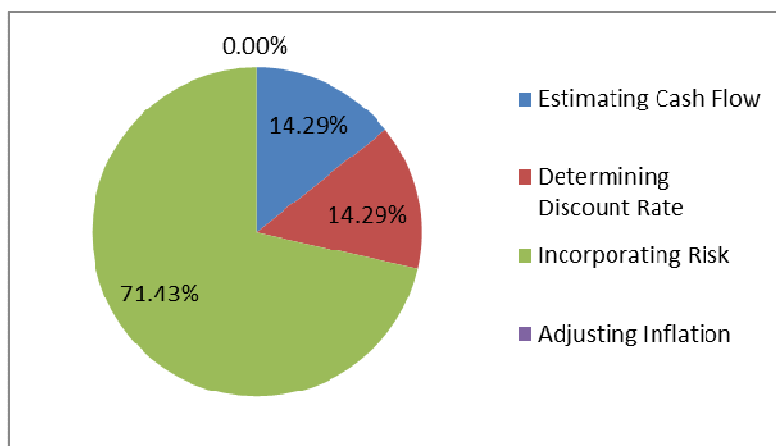
4.4.7. Respondents on Capital Budgeting Process as a Competitive Strategy

85.71% of the respondents considered capital budgeting process as a strategy of achieving competitive advantage over their competitors while the remaining 14.29% believed it was not a strategy.

Figure 4.4.7: Is Capital Budgeting Process A Competitive Strategy?
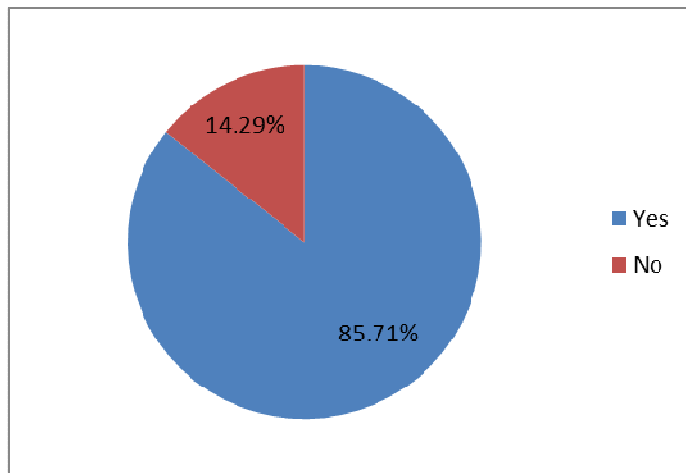
4.5: Correlation and Regression Analysis

4.5.1: Correlation Analysis

The independent variables in a multiple regression are not correlated with each other.

Table 4.5.1: Pearson Correlation Coefficients

	ROA	NPV	ARR	PBP	IRR
ROA	1.000				
NPV	0.290	1.000			
ARR	0.385	0.794	1.000		
PBP	0.788	0.462	0.437	1.000	
IRR	-0.536	0.604	0.453	-0.360	1.000

Source (Raw Data by Researcher)

If two predictor variables indicate a correlation coefficient of more than 0.80, then the problem of multi-collinearity exists and in the table above, none exceeds 0.8 between themselves and hence none of them are highly correlated with each other. If highly correlated with each other, it's difficult to separate the effect of each of them on and cannot test the dependent variable.

4.5.2: Strength of the Model

The coefficient of determination R^2 of 0.963 establishes that the capital budgeting techniques employed i.e. NPV, ARR, PBP and IRR explain 96% of the return on assets while only less than 4% remains unexplained. Table 4.5.2.1 showing the regression statistics establishes that the variables NPV, ARR, PBP and IRR are good predictors of ROA.

Table 4.5.2: Regression Statistics

Multiple R	0.981
R Square	0.963
Adjusted R Square	0.890
Standard Error	0.00565
Observations	7

Source (Raw Data by Researcher)

4.5.3 Regression Analysis

The multiple linear regression model derived then becomes;

$$ROA = 0.097 + 0.009X_1 + 0.004X_2 - 0.005X_3 - 0.015X_4$$

Where:

$\alpha = 0.097$ depicts that were NPV, ARR, PBP & IRR rated zero, then ROA would be 0.097

$X_1 = 0.009$ depicts that one unit change in NPV results in 0.009 increase in units of ROA

$X_{2 =}$ 0.004 depicts that one unit change in ARR results in 0.004 increase in units of ROA

$X_{3 =}$ -0.005 depicts that one unit change in PBP results in 0.005 decrease in units of ROA

$X_{4 =}$ -0.015 depicts that one unit change in IRR results in 0.015 decrease in units of ROA

The above model from the banks shows that NPV is positively related to ROA, closely followed by ARR. However, PBP and IRR are negatively related to ROA in banks which is a slight deviation from the previous studies undertaken.

Table 4.5.3.1: ANOVA

	Sum of Squares	Df	Mean Square	F	Significance
Regression	0.002	4	0.000	13.135	0.072
Residual	0.000	2	0.000		
Total	**0.002**	**6**			

Source (Raw Data by Researcher)

Table 4.5.3.1 established the summary of ANOVA findings and the table shows that there is no correlation between the independent variables (capital budgeting techniques) and the dependent variable ROA (financial performance) since the significance factor of 7.20% is more than the required 5.00% and hence the model is not significant and cannot conclusively predict ROA.

Table 4.5.3.2: Model Summary

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant	0.097	0.019		5.197	0.035	0.017	0.177
NPV	0.009	0.003	1.218	2.814	0.106	0.005	0.023
ARR	0.004	0.002	0.409	1.802	0.213	-0.005	0.013
PBP	-0.005	0.004	-0.550	-1.509	0.270	-0.020	0.010
IRR	-0.015	0.004	-1.655	-4.109	0.054	-0.032	0.001

4.6 Findings & Interpretations

The study established that the proportion with the highest respondents who have worked for their respective banks lies between 1-5 years closely followed by those who have worked for over 10 years. The lowest proportion of respondents has worked between 5-10 years. Of the interviewed banks, majority of them represented those owned by the public whereas a minority was privately owned.

Majority of the respondents confirmed that the executive management originates with the capital budgeting proposal in their firms. The budget committee, divisional manager and operating personnel all shared equally in terms of originating with the said proposal but there was no major disparity between the use of capital budgeting techniques apart from one. Most of the banks preferred using NPV method as their capital budgeting tool, which was closely followed by PBP and then IRR in order of preference. No bank unanimously preferred the ARR method for undertaking its investment appraisal but it is still in use by some of the banks.

Slightly more than a half of the respondents preferred using cost of debt and cost of equity in determining acceptable rate of return while more than a quarter of them had no idea which method is used to determine the acceptable rate of return. The minority of the respondents however preferred the use of WACC. An overwhelming majority considered capital budgeting process as a strategy of achieving competitive advantage over their competitors.

The study employed a regression analysis model to establish the relationship between capital budgeting techniques and the financial performance of banks listed in the Nairobi Securities Exchange. The findings depicted the model as significant with the analysis showing R^2 of 0.963 meaning it supports the relationship to the extent of 96.3%. The four independent variables were linearly related with the dependent variable, ROA which can be extended to the determination of ROA in other banks via forecasting using the model.

The study also depicted in the order of preference that with banks, the net present value method was positively related to return on assets. This method was closely followed by the accounting rate of return method. However, a deviation from the previous studies showed that where banks are concerned, the payback period and the internal rate of return methods are negatively related to the return on assets.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarized the collective findings of the study. Section 5.2 stated the summary of findings; section 5.3 established the conclusions while section 5.4 delved into the recommendations. Section 5.5 discussed the suggestions for further studies whereas section 5.6 noted the limitations encountered.

5.2 Summary of Findings

The main objectives of this study were to establish the capital appraisal techniques employed by the banks listed at the Nairobi securities exchange and configure the association that coexists between those techniques and the financial performance of the banks. The study thus detailed the findings which were analyzed to depict the conclusions and the situation as it is.

5.2.1 Capital Budgeting Techniques

The study findings revealed that in most banks, the executive management originated with the capital budgeting proposal as shown in figure 4.3.5. Banks mostly preferred the net present value appraisal technique in undertaking their investment decisions as established by the returned questionnaires in figure 4.4.1. This technique was closely followed by the payback period with a third of the respondents preferring it while less than a quarter of them had adopted the internal rate of return.

The findings established that no particular bank unanimously preferred the accounting rate of return technique in undertaking its investment appraisal but the method was however still in use in several of the banks. The study also found out as shown in figure 4.4.2 that most banks have never switched one budgetary technique for another or rarely do so. The derived value of 0.078 more than the actual significance level of 0.05 rendered the result insignificant.

5.2.2 Relationship between Budgeting Techniques & Performance

The research employed multiple regression analysis to establish the association between capital appraisal techniques and firm performance of the banks listed at the Nairobi Securities Exchange while the financial performance was derived from return on assets divided by total assets.

The model analyzed data to establish significance value using ANOVA as in the table 4.5.2.2. The value derived compared to the actual significance level of the test should be smaller so as to render the result significant. However, since the value derived of 0.072 is more than 0.05, there is no correlation between the independent variables NPV, ARR, PBP, IRR and ROA. However as depicted by the regression statistics table 4.5.2.1, the R square of 0.963 establishes that the predictor variables NPV, ARR, PBP and IRR are good predictors of ROA. Further findings as in table 4.5.3 depict that unit changes in NPV and ARR cause a slight increases in ROA whereas unit changes in PBP and IRR cause a decrease on the value if ROA.

5.3 Conclusions

The aim of this study was to establish the capital budgeting techniques employed by banks and the association between such techniques and the financial performance of banks at the NSE. From the research findings, results showed that the capital budgeting techniques were majorly adopted by banks in the appraisal of their investments. It was therefore concluded that banks employed net present value, payback period, internal rate of return and accounting rate of return as budgeting techniques in order of preference

The regression analysis results established no significant association between the capital budgeting techniques employed and the financial performance of banks. However the individual ranking of independent variables in banks depicted that NPV was highly related to ROA as compared to the other variables and closely followed by ARR. PBP and IRR were negatively related to ROA which was a deviation from what other scholars have found out previously and what scholars have theoretically learnt about sophisticated capital budgeting techniques.

5.4 Recommendations

Most of the respondents as depicted by the questionnaires and other related queries they made lack necessary information on the use of capital budgeting techniques. Being a cornerstone of most of their investments, an urgent need for staff trainings especially on the acquaintance with the techniques employed is necessary as well as forming a team of knowledgeable staff to deal with capital budgeting for huge investments. More awareness to the general staff on what capital budgeting is about is also key as most of staff had no idea what it is or which department it fell under. Employee involvement is also key in such capital budgeting decision as they may capture an important aspect overlooked by executive management. Also there is need to assign more full time staff to a crucial aspect as investment analysis and involve them in production and review of guidelines pertaining to capital expenditure.

There is need to train banks managers (especially those based without the capital city) on financial competences as this will have a great effect on impact different undertakings and techniques would have on the firm both at regional and national levels. Management should be in the know of the cause and effect associations of the decisions if they are to influence the firm positively. The CMA and NSE should organize several seminars for managers on the causal effects of their investment decisions with respect to financials and to the wider economy.

5.5 Suggestions for Further Research

Further studies are needed to test the use of and the relationship between capital budgeting techniques and financial performance in other sectors of the Kenyan economy to depict whether there is any homogeneity in the results.

Further research is also required on the use of a different financial performance variable apart from ROA e.g. earnings per share (EPS), to test the relationship between capital budgeting techniques and financial performance.

Researchers could also endeavor to use a bigger sample than the one used in this study and depict whether the results would deviate or remain so hence adding to the already existing body of knowledge for future related studies.

5.6 Limitations of the Study

Most respondents were not very conversant with the particular capital budgeting technique employed by their respective firm and the whole capital budgeting aspect. Some of the terminologies used in the study may also lower the reliability levels due to misinterpretation by some respondents.

A serious challenge to the study was accessing the target population as it was not readily available and almost all the information had to be collected from the headquarters due to company's policies and bureaucracy pertaining outflow of information.

Most respondents were reluctant to respond to the questionnaires due to the sensitive nature of banks and the fear of unknown if such information were to leak to competitors or be used against them in such a competitive industry.

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APPENDIX I: BANKS LISTED AT THE NSE

BANKS LISTED AT THE NSE (NAIROBI SECURITIES EXCHANGE, 2012)

1. Barclays Bank Ltd (Ord 2.00)
2. CFC Stanbic Holdings Ltd (Ord.5.00)
3. Diamond Trust Bank Kenya Ltd (Ord 4.00)
4. Housing Finance Co Ltd (Ord 5.00)
5. Kenya Commercial Bank Ltd (Ord 1.00)
6. National Bank of Kenya Ltd (Ord 5.00)
7. NIC Bank Ltd (Ord 5.00)
8. Standard Chartered Bank Ltd (Ord 5.00)
9. Equity Bank Ltd (Ord 0.50)
10. The Co-operative Bank of Kenya Ltd (Ord 1.00)

APPENDIX II: QUESTIONNAIRE

This questionnaire contains three parts and is to be filled in by the officers from the ten listed banks in the NSE who are involved in the capital budgeting procedures of those respective banks. Kindly provide responses to the questions in each part as objective as possible by either ticking (√) or marking (X) beside the most appropriate alternative. Your responses will be treated with utmost confidence.

PART I: GENERAL INFORMATION

Name: ……………………………………………………………. (Optional)

Name of the Organization……………………………………………………

Position held: ………………………………………………………..

1. How long have you worked with this organization?
    a) Less than a year   ( )
    b) 1 – 5 years   ( )
    c) 5 – 10 years   ( )
    d) Over 10 years   ( )

2. Is the company a foreign company?

    Yes ( )   No ( )

3. What is the ownership status of your organization?
    a) State owned   ( )
    b) Public owned   ( )
    c) Private owned   ( )

    Others (specify) …………………………………….

PART II: INFORMATION ON CAPITAL BUDGETING

1. Does the company have a capital investment manual (written guidelines)?

    Yes ( )   No ( )

2. If yes, which year is the latest copy of the investment manual? ……………………

3. How many staff members are assigned full time to capital investment analysis?

    a) None   ( )
    b) 1 – 2 Staff   ( )
    c) 3 – 5 staff   ( )
    d) More than 5 staff   ( )

4. Does the company have guidelines on how requests for capital expenditure should be identified?

    Yes ( )   No ( )

5. Who produced the guidelines?

    a) Executive management   ( )
    b) Budget committee   ( )
    c) Divisional manager   ( )
    d) Operating personnel   ( )

    Others (specify) ……………………………………………

6. Who analyzes and reviews the business case requests for capital expenditure?

    a) Executive management   ( )
    b) Budget committee   ( )
    c) Divisional manager   ( )
    d) Operating personnel   ( )

    Others (specify) ……………………………………………

7. Tick below the people who originate with your capital budgeting proposal?

    a) Executive management   ( )

    b) Budget committee   ( )

    c) Divisional manager   ( )

    d) Operating personnel   ( )

Others (specify) ……………………………………………

PART III: USE OF CAPITAL BUDGETING TECHNIQUES

1. Please indicate how frequently your company employs the following budget techniques?

	PBP	ARR	NPV	IRR
a) Strongly disagree - 1	( )	( )	( )	( )
b) Disagree - 2	( )	( )	( )	( )
c) Neither agrees nor disagrees – 3	( )	( )	( )	( )
d) Agree - 4	( )	( )	( )	( )
e) Strongly agree - 5	( )	( )	( )	( )

2. Please state which of the following technique(s) does your company prefer when deciding which investments to undertake?

    a) PBP   ( )

    b) ARR   ( )

    c) NPV   ( )

    d) IRR   ( )

3. Has there been a time when the company changed from one budgetary technique to another?

    Yes ( )   No ( )

4. Does the company use any technique to assess a project's risk?

        Yes ( )   No ( )

5. If yes, please specify the one amongst

    a) Scenario analysis   ( )

    b) Sensitivity analysis   ( )

    c) Decision tree   ( )

    d) Simulation analysis   ( )

6. Which approach does the company use in determining minimum acceptable rate of return to evaluate proposed capital investment analysis?

    a) WACC   ( )

    b) Cost of debt   ( )

    c) Cost of equity   ( )

    d) Arbitrary chosen figure   ( )

7. What difficulties does your organization face in its capital budgeting process?

    a) Estimating cash flows   ( )

    b) Determining discount rate   ( )

    c) Incorporating risk   ( )

    d) Adjusting inflation   ( )

Others (Specify) …………………………………………………………..

8. Of the listed difficulties, which one do you consider most challenging? …………………

9. Do you consider your capital budgeting process as a strategy for achieving competitive advantage over your competitors?

        Yes ( )   No ( )

APPENDIX III: CORRELATION & REGRESSION

Descriptive Statistics

	Mean	Std. Deviation	N
ROA	.0529	.01704	7
NPV	3.1429	2.26779	7
ARR	2.4286	1.81265	7
PBP	3.8571	1.77281	7
IRR	4.0000	1.82574	7

Correlations

		ROA	NPV	ARR	PBP	IRR
Pearson Correlation	ROA	1.000	.290	.385	.788	-.536
	NPV	.290	1.000	.794	.462	.604
	ARR	.385	.794	1.000	.437	.453
	PBP	.788	.462	.437	1.000	-.360
	IRR	-.536	.604	.453	-.360	1.000
Sig. (1-tailed)	ROA	.	.264	.197	.018	.108
	NPV	.264	.	.017	.148	.076
	ARR	.197	.017	.	.163	.154
	PBP	.018	.148	.163	.	.214
	IRR	.108	.076	.154	.214	.
N	ROA	7	7	7	7	7
	NPV	7	7	7	7	7
	ARR	7	7	7	7	7
	PBP	7	7	7	7	7
	IRR	7	7	7	7	7

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.981[a]	.963	.890	.00565	.963	13.135	4	2	.072

a. Predictors: (Constant), IRR, PBP, ARR, NPV

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.002	4	.000	13.135	.072[a]
	Residual	.000	2	.000		
	Total	.002	6			

a. Predictors: (Constant), IRR, PBP, ARR, NPV

b. Dependent Variable: ROA

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	.097	.019		5.197	.035	.017	.177					
NPV	.009	.003	1.218	2.814	.106	-.005	.023	.290	.894	.381	.098	10.221
ARR	.004	.002	.409	1.802	.213	-.005	.013	.385	.787	.244	.355	2.814
PBP	-.005	.004	-.550	-1.509	.270	-.020	.010	.788	-.730	-.204	.138	7.252

IRR	-.015	.004	-1.655	-4.109	.054	-.032	.001	-.536	-.946	-.556	.113	8.849

a. Dependent Variable: ROA

Coefficient Correlations[a]

Model			IRR	PBP	ARR	NPV
1	Correlations	IRR	1.000	.906	-.153	-.851
		PBP	.906	1.000	-.194	-.818
		ARR	-.153	-.194	1.000	-.255
		NPV	-.851	-.818	-.255	1.000
	Covariances	IRR	1.414E-5	1.195E-5	-1.232E-6	-1.041E-5
		PBP	1.195E-5	1.229E-5	-1.450E-6	-9.327E-6
		ARR	-1.232E-6	-1.450E-6	4.561E-6	-1.770E-6
		NPV	-1.041E-5	-9.327E-6	-1.770E-6	1.059E-5

a. Dependent Variable: ROA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	NPV	ARR	PBP	IRR
1	1	4.479	1.000	.00	.00	.01	.00	.00
	2	.244	4.285	.02	.03	.12	.01	.00
	3	.205	4.672	.00	.00	.03	.04	.04
	4	.067	8.193	.01	.20	.83	.01	.00
	5	.005	29.897	.97	.77	.01	.94	.96

a. Dependent Variable: ROA

Descriptive Statistics of Capital Budgeting Techniques

	N	Range	Mean	Std. Deviation	Variance	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Frequency	4	4.00	2.2500	1.70783	2.917	.343	2.619
Valid N (listwise)	4						

Tests of Between-Subjects Effects

Dependent Variable:Frequency

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	Hypothesis	20.250	1	20.250	6.943	.078
	Error	8.750	3	2.917[a]		
CBT	Hypothesis	8.750	3	2.917	.	.
	Error	.000	0	.[b]		

a. MS(CBT)

b. MS(Error)