

THE RELATIONSHIP BETWEEN CAPITAL BUDGETING METHODS
AND PERFORMANCE OF WATER SERVICES BOARDS IN KENYA

BY

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A Management Research Project Report Submitted in Partial Fulfilment of
the Requirements for the Degree of Master of Business Administration
(MBA), School of Business, University of Nairobi

November 2009

DECLARATION

This research project is my original work and has not been presented for the award of a degree in any other University.

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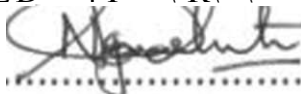
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DEDICATION

To my beloved wife Patricia Kamene and family, who offered unconditional love, sacrifice and support during the course of the entire MBA programme and especially during the project period.

Also I am greatly indebted to my Employer, Ministry of Finance-Accountant Generals' department for giving me the sponsorship and the foundation to help me identify my goals in life and this resulted in my advancement in the academic fora.

To my son James Malombe who always remained a source of joy and happiness and I am humbled to have you.

Honour and glory I give back to Almighty God. my fortress and redeemer.

ACKNOWLEDGEMENT

The grace of God has been exceedingly sufficient throughout my study and would like to thank the almighty God for his love, guidance and protection.

Special thanks go to the entire Water Services Boards team for assisting me with data and to ministry of Finance- Accountant General Department for the colossal support it offered during my study.

I would have wanted to mention everybody for their special contribution whether directly or indirectly but the space is limited. I appreciate my MBA colleagues especially Paul Ndimu, Joshua and Mureithi for their inspiration.

Finally, I would like to acknowledge the support I received from my supervisor, Mr. Mohammed N. Mwachiti. He sacrificed his time to see me through the project. His guidance and patience was enormous of which I say thank you. Special thanks also go to my Lecturers at the Business school whose guidance helped me in the entire period of the MBA programme.

ABSTRACT

One management practice which has been widely adopted by corporations is capital budgeting. The current study sought to establish the relationship between capital budgeting methods and performance of Water Services Boards in Kenya. The study was guided by the following specific objectives:- to identify the capital budgeting techniques employed by the Water Services Boards in Kenya; to establish the factors that influence the choice of the capital budgeting techniques used by the Water Services Boards in Kenya; and to establish the relationship between capital budgeting techniques and organizational performance..

A descriptive design was used to identify the relationship between capital budgeting techniques and performance in Water Services Boards in Kenya, whose number stood at 8 as at June 2008. A semi-structured questionnaire was used to collect primary data from the respondents. Since all the Water Services Boards have websites and reliable internet connection, the researcher sent the questionnaires to the respondents outside Nairobi by electronic mail. The Boards whose Head offices are located in Nairobi received their questionnaires by hand delivery (See Appendix III). Statistical Package for Social Sciences (SPSS) was used as an aid in the analysis. For purposes of the current study, the data pertaining to the profile of respondents was analyzed by employing content analysis. In order to determine the relationship between capital budgeting techniques and performance, regression analysis was used.

Findings of the study indicated that the capital budgeting techniques used by Water Services Boards in Kenya include Net Present Value, Internal Rate of Return, Profitability Index, Average Rate of Return and Payback Period. The findings further showed that the factors that influence the choice of capital budgeting techniques include: • Cost of debt to the Water Service Board, either from public or private sources; Internal Rate of Return; Average cost of capital for its stakeholders; Average rate of return on equity invested by the Water Services Boards; and Risk associated with the project. The findings also pointed at a positive relationship between usage of capital budgeting techniques and organizational performance. Improved access to funding to undertake projects and informed decision making were cited by the respondents as being the major benefits of adoption of capital budgeting techniques.

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ABBREVIATIONS AND ACRONYMS

AHP	Analytic Hierarchy Process
CB	Capital Budgeting
CFD	Discounted Cash Flow
CFO	Cash Flow From Operations
FPS	Earnings Per Share
IRR	Internal Rate of Return
NPV	Net Present Value
PI	Profitability Index
PVA	Present Value Approach
ROA	Return On Total Assets
ROF	Return On Stockholders' Equity
ROI	Return On Investment
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
USA	United States of America

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

1.1.1 Capital Budgeting Techniques

Capital budgeting is the technical component of an organization's strategic planning process. The traditional tasks of capital budgeting apply equally well to non-profit and for-profit organizations. Connellan (1982) stated that for not-for-profit oriented organizations, capital budgeting consists of two components: analysis; and the lowest cost of capital for the project. Capital budgeting techniques are typically classified into non-discounted cash flow techniques, and discounted cash flow techniques. Non-discounted cash flow models do not explicitly consider the time value of money and include payback analysis and accounting rate of return analysis (Hammack, 1995). While non-discounted cash flow models tend to be simpler, the omission of the impact of the time value of money often results in a suboptimal decision. Three discounted cash flow techniques are traditionally utilized: (i) present value approach (NPV); (ii) Internal rate return approach (IRR); and (iii) profitability index (PI) (Brigham, 1985).

In this study, a framework for capital budgeting by not-for-profit organizations, adapted from Levy and Samat (1986) is proposed and includes: the establishment of the organization's mission, organizational definition and long-term strategic goals; a search for projects which will enhance the organization's ability to meet its mission and goals; forecasting of cash outflows; forecasting of both cash inflows and/or member benefits attributable to the project; establishment of social and financial measures; both a social and a financial assessment of benefits and costs of the project; and the reassessment of past investments.

One management practice which has been widely adopted by corporations is capital budgeting. Capital budgeting is the rational allocation of financial resources among competing multi-period projects. Brigham (1985), suggested that capital budgeting is the process of analyzing planned expenditures on fixed assets. Schwarz (1987), suggested that capital budgeting is an integral component of the organization's strategy/plans/budgets process.

Capital budgeting has been widely utilized as a management and strategic planning tool by corporations (Klammer, 1973; Iitman and Forrester, 1977; Schall *et al.*, 1978; Aggarwal, 1980; Kim and Farragher, 1981; Jones, 1986; Cook and Rizzulo, 1989). Chandra (1987), suggested that the budgeting process often has many behavioral outcomes in the organizational planning process, such as enhanced goal congruence and more universal participation. Currently, a majority of major corporations make use of some type of capital budgeting technique in their strategic planning process (Moore and Reichert, 1989; White *et al.* 1989). There are other methods of capital budgeting techniques used for evaluating social projects such as the UNIDO method. Aggregate Approach for measuring infrastructural impact on poverty reduction. Multiplier Input-Output (I-O) models. General Equilibrium Analysis, Economic Approach. Least Total Cost analysis, and Multiplier Criteria analysis.

Haka *et al.* (1985) use market information in order to determine the effect on a firm's market performance of switching from naive to capital budgeting selection procedures. They consider the efficiency of the incorporation of this new information into the stock price by constructing two different scenarios. In the first scenario it is assumed that information on the policy change is disseminated gradually over time. The market participants will learn about the policy change by observing the capital expenditures made by the firm. The second scenario assumes that the

market participants learn of the policy change at the time of its initiation. To accept the second scenario market participants must assume that the firm will properly use, and regularly apply, capital budgeting techniques. Haka *et al* (1985) justifies the use of a market performance measure based on the fact that the main reason for implementing capital budgeting procedures is to maximize, or at least increase, shareholders' wealth.

According to Bernstein (1993) the relationship between net income and the capital invested in the generation of that income (return on investment or ROI) is one of the most valid and most widely recognized measures of firm performance, in general, and in a capital budgeting context in particular. The effectiveness of operating performance determines the ability of the firm to survive financially, to attract suppliers of funds, and to reward them adequately. Analysts use ROI as a tool in the following three areas (Ibid): (i) An indicator of managerial effectiveness; (ii) A measure of an enterprise's ability to earn a satisfactory return on investment; and (iii) A method of projecting earnings. However, ROI is not a reliable measure of a firm's ability to reward its shareholder* (Ibid). Two of the most common modified ROI investment measures are return on total assets (ROA) and return on stockholders' equity (ROE). ROA is perhaps the best measure of the operating efficiency of a firm (Bernstein, 1993; Stickney and Brown, 1999; Weygandt, Kieso and Kimmel, 1999).

The performance indicators for water services boards in Kenya can be categorized into five broad areas namely :- (a) coverage- under this category we have indicators such as annual water supply ('000 cubic meters); annual water consumption ('000 cubic meters) , urban/ rural population covered and served; (b) Facilities- under this category- we have performance indicators such as number of urban water schemes; number of urban sanitation schemes; number

of urban water service providers; number of urban metered connections; (c) staffing- under this category we have performance indicators such as total filled positions at the WSB; total staff vacancies at the WSB; total staff positions at the WSB; (d) Finance- Under this category we have performance indicators such as water sales ('000 cubic meters); water sales ('000 KES); operating revenue ('000 KES); operating expenditure ('000 KES); operating profit ('000 KES); net assets (000 KES); Equity ('000 KES); debt ('000 KES); debt/equity ratio; collection (•000 KES); collection efficiency; and Government of Kenya financial support as a % of total revenue. (Source: 2007, Various Government Official Documents). The current study sought to determine the relationship between capital budgeting methods and performance of water boards in Kenya.

1.1.2 Water Services Boards in Kenya

The Water Act 2002, gazetted in 2002 and went into effect in 2003, separates water resources management from delivery of water services. The Water Resources Management Authority (WRMA) is in charge of regulatory management of water resources, this includes among others the responsibility for the allocation of water resources through a permit system. The Water Services Regulator's Board (WASREB) is in charge of the regulatory functions over the provision of water and sewerage services. Under the Act, 6 Water Services Boards were formed and have since grown to 8. These are:- Lake Victoria South Water Services Board; Athi Water Services Board; Tanu Water Services Board; Coast Water Services Board; Rift Valley Water Services Board; Northern Water Services Board; Lake Victoria North Water Services Board; and Jirani Athi Water Services Board (Water Services Regulatory Board, June 2008)

The Water Services Boards' overall objective is to contribute to national development by promoting and supporting integrated water resource management to enhance water availability and accessibility. The specific objectives of the Water Services Boards include: - improving the sustainable management of water resources; improving the provision of water and sewerage services; improving utilization of land through irrigation and land reclamation; mobilizing resources and promoting efficiency in their utilization; and improving the management and access to water resources information.

1.2 Statement of the Problem

According to financial theory, the objective of the firm is to maximize the wealth of its shareholders. The optimal investment decision is hence the one that maximizes the present value of shareholders' wealth (Copeland and Weston, 1992). Capital budgeting procedures can under the assumption of economic rationality all be regarded as means, which a firm uses in order to fulfill its objective, to maximize shareholders' wealth (Ibid). This fact indicates that firms can increase or even maximize its shareholder wealth by using sophisticated capital budgeting procedures. Hence, from a perspective of traditional financial theory, the relationship between capital budgeting and performance is expected to be positive.

According to Copeland and Weston (1992), earlier studies on the relationship between capital budgeting and performance have presented limited reasoning about the foundations of this Assumption and have to a great extent seen it as a matter of course. However, there are also contrary arguments, indicating that the relationship is far more complex. One argument is that the implementation of capital budgeting techniques can be regarded as a means of coping with

acute resource scarcity (Pike, 1986). This is referred to as the economic stress hypothesis and implies that the application of capital budgeting techniques is more often associated with a poor financial performance (Haka and Pinches, 1985). Some researchers emphasize contingency theory' and argue that it is not the implementation of sophisticated procedures that is important, but the fit between the procedures and the firm context. Important issues to consider are organizational structure, financial status, management style and reward system (Pike, 1986; Haka *et al.* 1985; Pinches, 1982). Further, it has been pointed out that the degree of environmental uncertainty may influence the benefits that a firm has from implementing or improving sophisticated capital budgeting procedures. These arguments indicate that the perspective of traditional financial theory can be questioned. Water

Services Boards, like other not-for-profit oriented organizations, have traditionally made limited use of capital budgeting techniques when making long-term commitment of resources to various projects or facilities (Wacht and Whitford; 1976; Connellan. 1982; Signer, 1985; Birkofer *et al.*, 1987. Brinckerhoff, 1993; Apap and Wade. 1995). Paige. (1992), in a study of the management accounting practices of not-for-profit organizations, found that the area reflecting the greatest deficiency was the use of capital budgeting techniques. Unfortunately, there is a distinct paucity of research on the adoption of capital budgeting practices by Water Services Boards. Researchers in not-for-profit management suggest that sponsors, donors, members, regulators and other stakeholders of non-profits are demanding more accountability and better performance from management (Lammack, 1995).

Studies undertaken in Kenya on capital budgeting techniques include:- Otto Olum (1975)

°cu.vcd on capital investment appraisal, technique and publicity finances investment project in

the private sector; Simiyu (1977) focused on the problems of budgeting and motivation at the supervisory level in manufacturing firms in Kenya; Biwott (1987) focused on the budgetary allocation process in public sector institutions; and Kadondi (1987) undertook a survey of capital budgeting techniques used by companies listed at the NSI. None of these studies focused either on the relationship between capital budgeting techniques or on the water sector.

The study aimed at bridging knowledge gap in the area of adoption of Capital budgeting techniques in Water Services Board by seeking answers to the following research questions:-
What are the capital budgeting techniques employed by Water Services Boards in Kenya?;
Which are the factors that influence the choice of the capital budgeting techniques used by the Water Services Boards in Kenya?; and what is the relationship between capital budgeting techniques and organizational performance?

1.1 Objectives of the Study

The study was guided by the following specific objectives:-

1. To identify the capital budgeting techniques employed by the Water Services Boards in Kenya
To establish the factors that influence the choice of the capital budgeting techniques used by the Water Services Boards in Kenya
To establish the relationship between capital budgeting techniques and organizational performance.

1.4 Significance of the Study

It is anticipated that the study will be of benefit to the following groups of people;

1.4.1 Water Services Boards - The findings will help bring to light the relationship between capital budgeting techniques employed and performance of water boards. The computation of the discount rate and of cash flows and the method of estimating and adjusting for project risks in water services boards in Kenya. The findings will also facilitate the consistent use of capital budgetary techniques in decision-making that focuses on the right issues in Water services boards in Kenya, further, the findings will aid in the establishment of the factors that influence the choice of the capital budgeting techniques used by the Water Services Boards in Kenya as well as any relationship between uses of capital budgeting techniques and performance in water services boards.

1.4.2 Academics and Researchers - The findings will contribute to the existing body of knowledge in the area of Capital Budgeting. It will also inspire future researchers to carry out further research in the same or related field.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the literature related to the purpose of the study. The chapter is organized according to the specific objectives in order to ensure relevance to the research problem. The review was undertaken in order to eliminate duplication of what has been done and provide a clear understanding of existing knowledge base in the problem area. The literature review is based on authoritative, recent, and original sources such as journals, books, thesis and dissertations.

2.2 The Concept of Capital Budgeting

Capital budgeting decisions are among the most important of all management decisions. They help to mould a firm's future opportunities by influencing, among other things, its technology, its processes, its working practices and its profitability (Diacogiannis, 1994). A variety of techniques have been developed to assist in making capital budgeting decisions including payback, accounting rate of return and discounted cash flow. Academicians have for a long time extolled the virtues of the more sophisticated techniques such as discounted cash flow but, no matter what technique is used, all rely on estimates of future cash flows and these are almost "variably uncertain (Hirst, 1988).

Capital budgeting (CB) has received an increasing attention over the last ten years. Most studies

^ focused either on the relationships between investment decisions and financial theory

(B* mwich and Bhimani, 1989; Klammer, 1993; Meredith and Suresh, 1986; Pike and Dobbins,

1986). or^on behavioral aspects of CB (Bower. 1970; Lumijarvi. 1991; Marsh *et al.* 1988; Liarna *et al.* 1988)- Investment evaluation techniques are considered decision-making tools, but also opportunities to modify current organizations: facilitating the spread of information about performance of new technologies, due to the adoption of cross-functional analysis processes; and allowing post-auditing and, consequently, supporting organizational learning.

2J The structure of the CB process

Six fundamental phases in the CB process have been identified (Marsh *et al.*, 1988; Pinches, 1982; A/zonc, 1993). These are: *Identification of Investment opportunities*: this phase, although extremely important, has been often ignored, probably because it cannot be easily formalized; *Development and evaluation*: once investment proposals have been identified, it is necessary to analyse them thoroughly, collecting relevant and detailed information for each alternative, and evaluating their profitability and global attractiveness; *Selection*: a screening of investment proposals which have passed through the previous phase might be necessary because of financial or strategic factors. As a result, some projects might be cancelled or postponed to another planning period; *Authorization*: almost all investment projects must be approved (either by line management or by appropriate investment committees) before their implementation; *Implementation and control*: while the project is being carried out, follow-up procedures are indispensable to adhere to budgeted costs and deadlines; and *Post-auditing*: in this phase the "incomes of each project are compared with budget targets in order to assess forecast accuracy identify error patterns with a feedback effect on the whole decision process.

^ work examines the first four phases, which represent the heart of the decision process. The a*, W^o be taken into account for their feedback effects. Most of the CB process should be

held in the wider context of strategic planning. This link between CB and strategic planning is one of the "dark" aspects of CB, both in the literature (where it is often ignored) and in the companies examined. In fact, almost all investments are identified in the budgeting phase of the planning process only and appear insufficiently related to objectives and to programmes established in the previous phases of strategic planning.

The model suggests putting forward some of the CB activities, so to include them in the strategic programming phase of the planning process. Only a strict interconnection between these two fundamental aspects of the management of a firm can lead to a more efficient allocation of resources. This approach is based on the concept of investment modularity. Strategic programmes (Azzonc *et al.* 1993; Boucher and MacStravic, 1991) can be viewed as large, aggregated investment decisions (meia-invcstments). These can then be split into a number of smaller projects, which must be analyzed in this broader context

2.4 Methods for Capital Budgeting and Investment Decision Making

2.4.1 The Neo-Classical Approach: Discounted Cash Flow

Capital budgeting methods based on the discounted cash flow (DCF) have been the ruling instruments for investment decision making. The most commonly used DCF based method is the present value (NPV). In cases of large investments with long economic lives the static discounted cash flow based methods fail to present a highly reliable picture of the profitability

⁴⁰⁽¹⁾ Possibilities offered by the investment project at hand. As DCF based methods have been the only ones available, and it is better to use them than not to use any kind of decision tool for capital budgeting, they have rooted to management practices during years of use. There are many variations to the original formulae, but the underlying unsatisfactory assumptions still exist

2.4.2 The real option valuation (ROV) approach

To remedy the problems of the DCF based methods new methods have been introduced. The real option approach is a methodology that calculates the value of an investment with techniques originally developed for valuation of financial options. This gives the possibility to take into consideration the managerial flexibility to take action during the lifetime of an investment. The term real option was coined in an article about corporate borrowing by Myers (1977). Since then, there has been a growing literature describing the different theoretical aspects of real options (Kulatilaka and Marcus, 1988; Dixit and Pindyck, 1994; Trigeorgis, 1995), as well as the managerial and strategic implications and application of real options (Bowman and Hurry, 1993; Luehrman, 1998; Amram and Kulatilaka, 1999). A number of case based articles are also available to give further insight into real world application (Kulatilaka, 1993; Nichols, 1994; Micaliz/j, 1999). The value of a real option is computed by using the Black and Scholes (1973) formula extended by Merton (1973).

Structurally good problems for real option valuation are found, for example, in the petroleum industry, and in high research and development intensive branches. Real option valuation is a helpful tool to give insight into the value of the possibilities that can be found by investing in a given investment, it is also a methodology that widens the managerial horizon to take into consideration, and think about the possibilities of an investment. To manage the possibilities and¹⁰ maximize one's possibilities is what real options is all about. Real option valuation can be used to find the optimal time of investment and to take the managerial flexibility to act in consideration in an intuitive and correct way.

2.4.3 Fuzzy capital budgeting

Fuzzy capital budgeting, put simplistically, is to use fuzzy versions of the neo-classical capital budgeting methods and real option valuation. It needs to be observed that the fuzzy versions of the methods are original constructions, and not fuzzifications of the existing methods. This means that the mathematics is that of possibility, not of probability. It is not in the interest of this paper to elaborate further on fuzzy logic and possibility mathematics, we suggest the reader looks at Zadeh (1975), Dubois and Prade (1988), and Carlsson and Fuller (2002), for further reference on these issues.

To elaborate on what fuzzy mathematics can add to capital budgeting, the thing that springs first to mind is the intuitive way of a manager to think about future cash flow estimates of a project. Intuitively when asked to estimate such a cash flow the answer is often an interval. For example, "The project will produce a cash flow between 50 and 60, in two years from now". This is a fuzzy statement, and includes the intuition of the manager about the real uncertainty of the project, as he sees it. If the manager giving the statement is the best expert around, then the statement is the best available estimate of the future cash flow. With fuzzy capital budgeting methods these estimates can be used as they are, without having to typify them into one number.

It is done with the more common approaches. It is evident that as the uncertainty, as understood by the manager, is included in the estimate and carried directly into the profitability calculation, there is no loss of information, and the picture given is not that of exaggerated precision. Most of commonly used capital budgeting methods have their fuzzy counterpart, for example Ueckert (1997) and Kuchta (2000). There are also fuzzy real option valuation models built in Carlsson and Fuller (2000).

In addition to including more representative estimates for future cash flows into mathematically complex constructions of capital budgeting methods, fuzzy numbers give a possibility to include qualitative information into the capital budgeting process, in a very straightforward way. The fuzzy sets presenting the cash flow estimates can be adjusted dynamically to reflect the future trends that are revealed by a foresight process, and are in a qualitative form. A simplistic method to achieve this is presented in Collan and Majlender (2000). In the method, sides of fuzzy cash flow estimates are adjusted by market analysts to reflect the information about the future.

Finally, we would like to stress that advanced decision methods such as real options and fuzzy capital budgeting open the chance to explore the value of flexibility inside and outside a project, and give further insight into the real uncertainty of large investments. As they offer both a framework and tools to assess the possibilities and the risk that projects carry, it makes sense to make full use of them, and pursue the (pro-) active management of investments with them.

2.5 The Factors that Influence the Choice of Capital Budgeting Techniques

The problem with selecting an appropriate discount rate for a Water Services Board is complex. Water Services Boards, when selecting the discount rate to be used in capital budgeting, must consider four salient factors identified by Birkofer, JR., *et al* (1987): (i) cost of debt to the Water Service Board, either from public or private sources; (ii) average cost of capital for its holders; (iii) average rate of return on equity invested by the Water Services Boards; and (iv) risk associated with the project.

Capital budgeting techniques are typically classified into non-discounted cash flow techniques, discounted cash flow techniques. Non-discounted cash flow models do not explicitly

consider the time value of money and include payback analysis and accounting rate of return analysis (Levy, H. and Sarnat, M., 1986). While non-discounted cash flow models tend to be simpler, the omission of the impact of the time value of money often results in a suboptimal decision- Three discounted cash flow techniques are traditionally utilized: present value approach (NPV): Internal Rate of Return approach (IRR): and profitability index (PI) (Brigham, E.F., 1985). All discounted cash flow models utilize only incremental cash flows resulting from the selected alternative and explicitly consider the effect of time, ignored in non-discounted cash flow capital budgeting techniques.

2.6 Importance of Water Service Board in Kenya

It is imperative to note that the economic, social and political pillars of Kenya Vision 2030 are anchored on macroeconomic stability; continuity in governance reforms; enhanced equity and wealth creation opportunities for the poor, infrastructure; energy; science, technology and innovation; STI; land reform; human resources development; security as well as public sector reforms. On infrastructure the 2030 Vision aspires for a country firmly interconnected through a network of roads, railways, ports, airports, water and sanitation facilities, and telecommunications. Furthermore, to ensure that the main projects under the economic pillar are implemented, investment in the nation's infrastructure will be given highest priority. However, Kenya is a water scarce country. The economic and social developments anticipated by Vision 2030 will require more high quality water supplies than at present. The country therefore, aims to conserve water sources and start new ways of harvesting and using rain and underground water.

2030 Vision for water and sanitation is to ensure that improved water and sanitation are available and accessible to all. The goal for 2012 is to increase both access to safe water and

sanitation in both rural and urban areas beyond present levels. To promote Agricultural productivity, the area under irrigation and drainage will increase from 140.000 to 300.000 hectares. Specific strategies will be introduced to raise standards of the country's overall water, resource management, storage and harvesting capability. Kenya will also rehabilitate her hydro-meteorological data gathering network, construct multipurpose dams (on Nzoia and Nyando Rivers and other smaller dams), and also contract water and sanitation facilities to support industries and a growing urban population. (Kenya Vision 2030)

2,7 Capital Budgeting for Water Services Boards

Not-for-profit organizations, including Water Services Boards, have typically lagged behind for-profit corporations in the adoption of sophisticated management technology. The adoption of capital budgeting tools is no exception. Birkofcr *et at.* (1987)suggesl that not- for-profit organizations have had problems adopting capital budgeting models owing to problems in project payoff evaluation; problems with "sources of funds for capital investments"; and typically "inadequate nonprofit accounting practices for long-term investments". A further problem relates to the selection of the appropriate discount rate that reflects both the organisation's cost of capital and the risk associated with the project or investment.

Payoff evaluation for the organizations is not typically objective, as in the case of firms •"templing to win profits in the competitive marketplace. In fact, for not-for-profit organizations.

estimation and quantification of the project's benefits in monetary terms can be quite difficult.

A project's benefits to the not-for-profit organizations (which is equivalent to the benefits to the organization's stakeholders) basically fall into one of two groups. A project generally involves either a lowering of the organization's cost structure (such as the implementation of automated inventory control) or an increase in revenues (such as the development of an advertising campaign designed to stimulate sales). These cost and/or revenue changes result in increases in net cash flows. To determine whether the expenditure is beneficial to the organization, the present value of the cash inflows, discounted by the appropriate risk-adjusted cost of capital, should be compared with the present value of the cash outflows. If the present value of the inflows is greater than the present value of the outflows, the project is accepted.

The "sources of funds" issue may also complicate the capital budgeting process for co-operatives. Funding is often linked to specific programme activities or outcomes, such as when funds are allocated for use on a specific project. For example, a co-operative may receive a grant to develop a marketing programme for a new agricultural product, with the use of these funds restricted to that purpose only. In addition, the fund accounting practices typically used by many co-operatives make it much more difficult rationally to manage financial resources over time.

The problem with selecting an appropriate discount rate for a not-for-profit organization is complex. According to Kamath and Oberst (1992), the organizations' management, when selecting the discount rate to be used in capital budgeting, must consider four salient factors: cost of debt to the organization, either from public or private sources; average cost of capital for its stakeholders; average rate of return on equity invested by the organization; and risk associated with the project.

2.8 Capital budgeting techniques and Performance

Traditional financial theory states that the implementation of sophisticated capital budgeting techniques will result in improved corporate performance (Copeland, 1979). What measure of performance to use in order to test this hypothesis is however a matter of dispute. Generally, performance can be measured using either stock market information, accounting information or a combination of both.

2.8.1 Market Performance

The efficient market hypothesis is often used as a tool to create structure when analyzing information contained in stock prices. The implication of efficient capital markets is that security prices fully reflect all available information. Since all information is available to everybody at no cost it is not possible to possess systematic information superiority. The efficient market hypothesis has historically been subdivided into three categories; weak form efficiency, semi-strong form efficiency and strong form efficiency. The efficient market hypothesis maintains that in its semi-strong form the market equilibrium prices of securities fully reflect all publicly available information, and that these equilibrium prices react instantaneously, and in an unbiased fashion, to new information (Downes and Dyckman, 1973; Copeland, 1979; Ross *et al.* 1999). This hypothesis has been given a high degree of empirical support, but there are also a large number of studies that are not consistent with the efficient-markets hypothesis in its semi-strong form (Ibid). Some of these studies are discussed in "A Critical Look at the Efficient Market Empirical Research Literature as It Relates to Accounting and Information" by Downes and Dyckman (1973). The concluding remarks of this article however do not reject the hypothesis. They shed light on the fact that critique exists.

Haka *et al* (1985) use market information in order to determine the effect on a firm's market performance of switching from naive to capital budgeting selection procedures. They consider the efficiency of the incorporation of this new information into the stock price by constructing two different scenarios. In the first scenario it is assumed that information on the policy change is disseminated gradually over time. The market participants will learn about the policy change by observing the capital expenditures made by the firm, The second scenario assumes that the market participants learn of the policy change at the time of its initiation. To accept the second scenario market participants must assume that the firm will properly use, and regularly apply, capital budgeting techniques. Haka *et al* (1985) justifies the use of a market performance measure based on the fact that the main reason for implementing capital budgeting procedures is to maximize, or at least increase, shareholders' wealth. According to Haka *et al* (1985), measuring firm performance using accounting data is not necessarily consistent with the goal of shareholders' wealth maximization. In fact, they reason, the argument for using capital budgeting techniques is in part an argument against the use of traditional accounting-based selection techniques. It is, however, stated in the study that it might be difficult for market participants to acquire information about policy changes, and whether firms properly use and regularly apply sophisticated capital budgeting techniques. This fact implies that it can be incorrect to use market information when measuring corporate performance in a capital budgeting context.

In most of the studies analyzing the relationship between the use of capital budgeting techniques and firm performance, performance measures based on the firm's stock market value are considered as inappropriate for the following reasons (Pike, 1984): (i) Due to lack of information and management practices available to shareholders; (ii) The difficulty of isolating the influence of stockholder knowledge on the stock price, if the stockholders do possess it; (iii) The more direct impact

that changes in capital budgeting practices has on accounting returns; (iv) Managers place much higher importance on return on capital and profit growth goals than on shareholder goals

Reason 4 is an issue that has received much attention in research literature. There is an extensive amount of research concluding that managers' objectives to a large extent involve growth in sales, personal prestige and power (Francis, 1980; Copeland, 1979; Ross, 1999). This problem of managers not acting in the best interest of the shareholders is referred to as the agency problem (Copeland, 1979; Ross *et al.* 1999). Measures have been taken to solve the agency problem with stock option plans, restricted stock, stock appreciation rights etc., (DeFusco, and Zorn, 1990). If managers anyway place a higher importance on return on capital and profit growth goals than on shareholders' goals, superiority in performance might be most correctly measured using accounting information. In Kenya, Water services boards are not listed in the Nairobi Stock Exchange (NSE) and therefore this method is not applicable for the purposes of this study.

2.8.2 Accounting Performance

The majority of the studies analyzing the relationship between capital budgeting and firm performance use accounting information when constructing performance measures (Christy, 1966; Kiammer, 1973; Kim, 1982; Pike, 1984; Farragher *et al.*, 2001).

Accounting ratios are well-known and widely used tools for financial analysis. While the imputation of a ratio involves a simple arithmetical operation, its interpretation is a far more complex matter. Firstly, measuring firm performance by using accounting data is not as straightforward as when using stock market values. According to Bernstein (1993), there are criteria by which performance can be measured using accounting information. Changes in

sales, profits, or in various measures of output are among the frequently used criteria. Secondly, Lee and Zumwalt (1981) indicate that different performance measures may be important in different industries. Moreover, many arbitrary judgments are necessary in reaching the accounting ratios. Among the arbitrary judgments are the problems of allocation of receipts and expenditures, methods of depreciation, capitalization versus expensing of research and development expenditures, valuation of inventory and inflation. As values are determined for sales, operating income, earnings before taxes, and earnings after taxes, it becomes difficult to determine which of the performance measures most accurately reflect the "true" performance of the firm. No one of these measurements, standing by itself, is useful as a comprehensive measure of corporate performance. Increases in sales are, for example, desirable only if they result in increased profits. Increases in profits, on the other hand, must be related to the capital that is invested in order to attain these profits.

According to Bernstein (1993) the relationship between net income and the capital invested in the generation of that income (return on investment or ROI) is one of the most valid and most widely recognized measures of firm performance, in general, and in a capital budgeting context in particular. The effectiveness of operating performance determines the ability of the firm to survive financially, to attract suppliers of funds, and to reward them adequately. Analysts use ROI as a tool in the following three areas (Ibid): (i) An indicator of managerial effectiveness; (ii) A measure of an enterprise's ability to earn a satisfactory return on investment; and (iii) A method of projecting earnings. However, ROI is not a reliable measure of a firm's ability to reward its shareholders (Ibid). Two of the most common modified ROI investment measures are return on total assets (ROA) and return on stockholders' equity (ROE). ROA is perhaps the best measure of the operating efficiency of a firm (Bernstein, 1993; Stickney and Brown, 1999;

W'cygandi and Kimmel, 1999). The formula for this measure is the following:

If the investment base is defined as comprising total assets or long-term debt plus equity capital, then income before interest expenses is used. The exclusion of interest from income deductions is due to it being regarded as a payment for the use of money to the suppliers of debt capital in the same way that dividends are regarded as a reward to suppliers of equity capital. The tax adjustment of the interest expense recognizes that interest is a tax-deductible expense and that if the interest cost is excluded then the related tax benefit must also be excluded from income. Regardless of what method is being used in arriving at the investment base, the return achieved over a period of time is always associated with the investment base that was, on average, actually available to the firm over that period of time. It will hence be necessary to average it (Bernstein, 1993). The computation of return on shareholders' equity (ROE) measures the return accruing to the owners' capital (Bernstein, 1993; Stickney and Brown, 1999)

The most commonly used accounting performance measure in studies analyzing the relationship between capital budgeting techniques and corporate performance is the operating rate of return. The operating rate of return is a modification of ROA. Operating ratios are ratios that throw light on the profit making activities in the firm. The computation of this measure differs slightly in the articles. Kim (1982) uses an average operating profit defined as operating cash divided by end-of-year operating assets, where operating cash is defined as income after taxes but before financial expenses, depreciation and non-recurring items. Adjustment is made to account for the tax savings realized with financial expenses. Operating assets are defined as tangible assets. Larragher *et*

al (2001) also use the operating cash flow in the numerator but instead of operating assets, total assets are used in the denominator.

Both articles thus use cash flows instead of net income figures in the numerator. The usage of cash flow figures has many times found support in research literature analyzing the importance of accrual and cash components of earnings when measuring performance. For example, Bernstein (1993, p. 461, quoted by Sloan, 1996) states that:

"CFO (cash flow from operations), as a measure of performance, is less subject to distortions than is the net income figure. This is so because the accrual system, which produces the income number, relies on accruals, deferrals, allocations and valuations, all of which involve higher degrees of subjectivity than what enters the determination of CFO. That is why analysts prefer to relate CFO to reported net income as a check to the quality of that income. Some analysts believe that the higher the ratio of CFO to net income, the higher the quality of that income. Put another way, a company with a high level of income and a low cash flow may be using income recognition or expense accrual criteria that are suspect."

OIK hypothesis that is born from this reasoning is that the persistence of current earnings performance is decreasing in the magnitude of the accrual component of earnings and increasing in the magnitude of the cash flow component of earnings (Sloan, 1996), high earnings performance that is attributable to the cash flow component of earnings is more likely to persist than high earnings performance that is attributable to the accrual component of earnings. Also, when analyzing performance in a capital budgeting context, the higher quality of the cash flow component is an issue under consideration. Pike (1984), for example, refers to the cash flows as "we yield He himself, however, measures the operating performance by dividing the pre-til by the total year-end capital employed minus short-term borrowings. He considers \hat{P}^*_{mi} profit to be a crude approximation of the cash flow return but nevertheless he

\$ it as sufficiently adequate for the research purpose.

Hammer (1973) uses a slightly different approach to measure corporate performance. As the authors referred to above, he employs the operating rate of return, in his case defined as: the operating income divided by the operating assets at year-end. Operating income is defined as income before taxes, financial expenses, depreciation, nonrecurring items, and research and development expenses. Operating assets are defined as current assets plus gross plant. The values obtained are then adjusted by using the first-order exponentially smoothed average return where smoothing coefficients of 0.1 and 0.4 are used. Hammer's explanation for using this approach is that a simple average-operating rate of return measure will allow a firm earning high returns at the beginning of the measurement period and simply maintaining or even experiencing declining returns to rank higher than a firm starting with low average returns and improving rapidly.

Hammer (1973) also considers using an incremental performance measure defined as the change in operating income for a period divided by the change in operating assets for that period. A key problem with the incremental measure is however, the lack of a precise means of relating operating income to the investment producing it. Other problems with this measure are that negative returns may be indicated even when known true yield is positive. Small changes in investment and/or cash flow also make the incremental returns highly volatile when true yield is constant (Ibid).

Hammer (1966) stands out from the rest by not using the operating rate of return as a measure of performance but instead employs a company's net earnings per share of common stock. This measure as well as ROE has however been dismissed as inappropriate in a capital

budgeting context. According to Kim (1982) ROA, in comparison to ROL, tends to provide a better description of the effectiveness of capital investment than ROL. ROI combines the effect of capital investment and financial leverage. Hence, it does not explicitly consider the amount of capital required to generate a particular level of earnings. The same is true for the earnings per share (EPS) measure. Two firms with the same ROF or FPS are not equally efficient in using their assets if one firm requires twice the amount of assets or capital to generate those earnings than the other firm does. In studies concerned with the allocation of capital independent of financial leverage, ROA appears to be a more accurate measure of capital budgeting effectiveness.

As mentioned above there are, just as with market information, certain disadvantages with using accounting information in order to measure performance. According to Lee (1975) the financial statements constitute the basis upon which accounting ratios are constructed. The strengths and **weaknesses** of using accounting ratios when measuring performance hence, to a large extent, depend on the strengths and weaknesses of using the financial statements as an analytical tool. One weakness pointed out by Copeland (1979) is that financial statements reflect historical information and does not take into account the present value of future cash flows. Marton (1998) brings up another issue that may cause difficulties when comparing accounting information between companies situated in different countries, i.e., international accounting diversity. This diversity may exist in several dimensions. There may, for example, exist differences in accounting principles, disclosure levels, and auditing practices. Other areas include, for example, differences in accounting issues and terminology. There might also exist differences in standards. Moreover, according to Tamari (1978), there might be moral aspects to consider when analyzing financial statements. Managers might face a conflict between the legal

requirements of what should be reported and the moral obligation of providing additional information reflecting the business reality faced by the firm. A number of aspects of the firm's behavior are not normally included in the financial data, which it releases. These aspects might however be just as or even more important than items listed in the financial statement for a correct valuation of the performance of the firm. In some cases additional information may significantly change, or even nullify, the meaning of such figures (Ibid).

Solomon (1966) analyses the size and the nature of the error inherent in the book-yield measure by testing how the return on investment measure differs from the known true yield (defined as the discounted cash flow method) when certain basic parameters (e.g., length of project life and accounting policy with respect to depreciation) are changed. He concludes that his findings present financial analysis with a serious dilemma. He states (p. 243):

"On the one hand, the ratio of net income to net book assets is not a reliable measure of return on investment. On the other hand, analysis definitely requires some measure of return on investment and there appears to be no other way in which this concept can be measured for an on-going division or company. His pragmatic answer is that book-yield will continue to be used, but that its use must be tempered by a far greater degree of judgment and adjustment than we have employed in the past."

Despite all problems, accounting measures can be useful when evaluating a firm's past performance and future prospects. One aspect of this usefulness is, as stated by Solomon (1966), financial statements are the only data available describing the financial structure of the firm and the results of its economic activities • the analyst simply has very little alternative but to use them. Another aspect is that despite the social and economical change, which has taken place, financial statements have basically preserved their original form since their invention in the nineteenth century. This fact reflects the fundamental strength of financial reporting as an

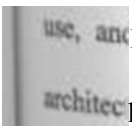
indicator of the firms' financial activities. Moreover, the fact that investors, lenders, management and other interested parties do use these statements as a basis for their decision is perhaps the best proof that they may serve this purpose (Ibid).

2,9 Conclusion

Budgeting is one of the fundamental decision-making processes in organizations. During budget formulation, officials determine the portion of the organization's resources that the manager of each unit will be authorized to spend... budgets often establish performance goals for the unit in terms of costs, revenues, and/or production (Little *et al.*, 2002). Performance indicators therefore become critical while allocating the scarce resources.

This is a succinct and accurate summation of the importance of the budgeting function within the majority of organizations. As demonstrated by the four distinct and diverse companies investigated, budgets are used in differing degrees and for different purposes across different industries. Some industries use budgeting as a control of expenditures, where other businesses use budget functions as a tool for planning, a means of communication, or as a goal to measure performance. The benefits of budgeting were not minimized despite the source of initial funding (i.e. public funds, taxpayer funds, shareholder investments or privately acquired monies).

Although companies institute budgeting formats in different ways, all companies benefit from its

 I budgeting functions perform an important mechanism in a firm's organizational structure-corporate and business success depends on it.

^ closest study to the current one was undertaken by Kadondi (1987), focusing on capital

^{ln}B techniques used by companies listed at the NSL. The current study is different in dial

while Kadondi focused on the private sector, the study focuses on the public sector, specifically the water services boards. In addition, the current study goes further to establish the relationship between capital budgeting techniques and organizational performance. Further the environments are different in that Kadondi's study was for profit organizations whereas this study is for not-for-profit organizations whose main objective is to maximize the welfare of different water consumers.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

A descriptive design was used to identify the relationship between capital budgeting techniques and performance in Water Services Boards in Kenya. The method was preferred as it permits gathering of data from the respondents in natural settings. In this case, it was possible for the researcher to administer the data collection tools to the respondents in their workstations, which was relatively easy and aided in increasing the response rate.

3.2 Population of the study

The population of the study was the Water Boards that were created by Water Act, 2002 and given the responsibility of overseeing capital investments in their various jurisdictions. The Seven Water Boards created by the Water Act, 2002 are as listed in Appendix 1. A census was undertaken owing to the small number of Water Boards, which could also easily be reached. The respondent from each of the organizations was the Finance Manager or any other person responsible for budgeting.

Data collection

Data Collection Tools

A semi-structured questionnaire was used to collect primary data from the respondents. Closed-ended questions were presented on a Likert scale. The Likert scale, commonly used in business

Lpearch was used because it allows participants to respond with degrees of agreement or disagreement. The rating was on a scale from 1 (lowest impact or least important) to 5 (highest L p c t or most important). Ilic questionnaire was structured in two main sections. Section I captured the profile of the respondent Water Boards whereas section II captured information on pertinent issues touching on Capital Budgeting as per objectives of the study.

In order to meet the first objective of the study. "To identify- the capital budgeting techniques employed by the Water Services Boards in Kenya", the respondents were provided with a listing of the various capital budgeting techniques and asked to indicate the extent to which their respective organizations use each of them by ticking as appropriate along a five point scale. The five point scale ranging from very much (5 points) to not at all (1 point)

In order to meet the second objective of the study, "To establish the factors that influenced the choice of the capital budgeting techniques used by the Water Services Boards in Kenya", the respondents were provided with a listing of the possible factor that could influence the choice of .apital budgeting techniques and asked to indicate the extent to which they agreed/disagreed that exh of the listed factors influenced the choice of the various capital budgeting techniques they ued.

U2 Data Collection Procedure

fee all the Water Boards have websites and reliable internet connection, the researcher sent the <««>onnaire to the respondents outside Nairobi by email. The Boards whose I lead offices arc ^atcU in Nairobi received their questionnaires through hand delivery. A letter of introduction, ^'"B the purpose of the study was attached to each questionnaire. In addition, the researcher ^1,tcd two Water Services Boards and made telephone calls to the remaining four respective

respondents to further explain the purpose of the study and set a time frame for the completion of questionnaires. Once completed, the researcher personally collected the questionnaires from respondents in Nairobi, while those from outside Nairobi were received online. In addition, personal face to face follow up interviews to two Water Service Boards and telephone interviews were conducted with all the respondents, aided by an interview schedule. In this case the researcher was able to obtain additional information to corroborate findings from the questionnaire.

3.4 Data analysis and presentation

Statistical Package for Social Sciences (SPSS) was used as an aid in the analysis. The researcher preferred SPSS because of its ability to cover a wide range of the most common statistical and graphical data analysis and is very systematic. The SPSS was used to generate percentages, frequencies, mean scores and standard deviations. For purposes of the current study, the data pertaining to the profile of respondents was analyzed by employing content analysis. In order to determine the relationship between capital budgeting techniques and performance, regression analysis was used. A typical simple regression model in form of:

*herec

y

•dependent variable- performance indicator e.g. equity debt ratio

y

•independent variable- capital budgeting method e.g. NPV. IRR, PI c.t.c

P

•the constant-

p , -is the slope or change in Y

ϵ -is the error

Regression analysis is the most commonly used method for measuring the association between variables. It involves estimating a regression model that enables the researcher to measure the relationship in consideration. The model is set up because it is believed that there is a linear relationship between one dependent and one or a number of independent (predictor) variables. For the capital budgeting area the regression model was constructed using a measure of corporate performance as the dependent variable and the degree of capital budgeting sophistication as one of the independent variables. A regression model employing only one independent variable was preferred. Such a model has been used by Kim (1982). By including these variables in a regression model, one aims to isolate their relationship. To establish the factors that influence the choice of capital budgeting techniques in Water Service Boards then, factor analysis was used.

CHAPTER FOUR: FINDINGS AND DISCUSSION

41 Introduction

The study sought to establish the relationship between capital budgeting methods and performance of Water Services Boards in Kenya, whose number stood at 8 as at June 2008. A combination of both quantitative and qualitative techniques was used in data collection. Out of the 8 questionnaires that were sent out, 6 were returned completed representing a 75% response rate. The high response rate could be attributed to the personal effort of the researcher, who made a follow up of every questionnaire sent out. A response rate of 20% for Public Sector organizations is usually acceptable (Aosa,). The data pertaining to the profile of respondents will be analyzed by employing content analysis while descriptive statistics were used to analyze data pertaining to the first and second objectives of the study. In order to determine the relationship between capital budgeting techniques and performance, regression analysis was used. Computation of frequencies in tables, charts and bar graphs was used in data presentation. The information was presented and discussed as per the objectives and research questions of the study.

4.2 Profile of Respondents

4.2.1 Water Services Boards that Participated in the Study (Respondent Organizations)

The respondents were asked to indicate the name of their respective organizations. The researcher sought to establish the organizations that took part in the study. The findings show that the following are the Water Services Boards that participated in the study:- Tana Water Services Board. Lake Victoria Water Services Board. Tana Athi Water Services Board. Athi Water Services Board. Lake Victoria South Water Services Board and Northern Water Services Board

4.2.2 The products and Services offered by the Water Services Boards

The respondents were asked to indicate the products and services that their respective organizations offered, the responses are summarized and presented as follows: - contracting water services providers and supporting them to ensure delivery of quality water services; ensuring water services are delivered to consumers by water services providers (companies); and provision of water and sewerage services.

Period Worked in Current Organization

The respondents were asked to indicate the period of time they had worked in their respective organizations. The responses are summarized and presented in table 4.1 below.

Table 4.1: Period respondents worked in current organization

Period worked	Distribution	
	Frequency	Percentage
Less than 1 year	4	67
Between 1 and 5 years	2	33
Between 6 and 10 years		
Between 11 and 15 years	.	.
16 years and above	.	.
	6	100

The findings show that where as 67% of the respondents had worked in their respective organizations for one year or less. 33% had worked for between 1 and 5 years. The period worked is long enough to enable respondents give objective answers.

U.4 Position, Duties and Responsibilities of the Respondents

The respondents were asked to indicate their respective positions, duties and responsibilities. The responses are summarized and presented as follows:-

Among the respondents were three Finance and Administration managers, whose duties and responsibilities include the following:- in charge of finance. Human resource management. ICT Procurement; Liaising with legal external lawyers on legal matters; Presentation of final and reports; Preparation of contract reports; Chief financial advisor, planning and

budgeting, treasury management, preparation of management and statutory reports, investment planning and financial support to other departments; Procurement and distribution of the Board's office equipment services and assets; Ensuring adequate control that support the Board's financial operations efficiency and compliance; Implementing financial and accounting systems; Overseeing the production of timely and accurate monthly, quarterly and annual financial management accounts and other reports; Formulation and implementation of sound financial policies, strategies and systems for the Board; and Managing all the Board's internal and external financial reporting, budgeting and forecasting requirements

There were two managers in charge of financial planning and analysis, whose duties included the following: - financial analysis, financial modeling, and risk management, business planning and quality management. There was also one coordinator of projects (Dams and Boreholes), whose duties and responsibilities included the following:- coordination with district heads to prepare annual budgets ahead of financial year; liaising with National Water Conservation Cooperation to seek approval of the budget as per their work plan; mid monitoring of those projects up to the stage of commissioning. There was one Inspector of water supplies in charge of planning and design, whose duties included planning of water supplies and evaluating of proposals for the drafting and design for community water supplies for further approval for funding and hence installation.

4.3 The Relationship between Capital Budgeting Methods and Performance of Water Services Boards in Kenya

4J.1 Type of Capital Budgeting Techniques used by the Water Services Boards in Kenya

In order to meet the first objective of the study. "To identify the capital budgeting techniques used by the Water Services Boards in Kenya", the respondents were first asked to indicate whether their respective organizations used capital budgeting techniques. Whereas one respondent indicated that capital budgeting techniques were not used, the other five respondents indicated that their organizations used capital budgeting techniques. The respondent organization that did not use capital budgeting techniques further indicated that the non-usage of capital budgeting techniques was occasioned by the difficulty in estimating an appropriate cost of capital to the Water Services Boards. Secondly, the respondents were provided with a list of the various capital budgeting techniques and asked to tick all relevant techniques as well as to rank their importance. Five rankings were provided: Not applicable. Not Important. Moderately Important. Important and Very Important. Respondent companies Water Services Boards are considered as using a particular technique if they ticked any of the rankings except for the "Not Applicable" box.

Table 4.2: Types of Capital Budgeting Techniques used by Water Services Boards and their Importance

Capital Budgeting Techniques	Number of Water Services Boards	Percentage Responses
Net Present Value	6	100%
Payback Period	5	83%
internal Rate of Return	4	66%
Hurdle Rate	4	66%
Accounting Rate of Return on Assets	4	66%
Adjusted Net Present Value	3	50%
Value at Risk	3	50%
Real Options Method	4	66%
Other Techniques	1	16%

As can be seen in table 4.2, column A, NPV, Payback Period, and IRR are the techniques most frequently used by the Water Services Boards that participated in the study. NPV and Payback are the two most popular methods, with over 83% of the companies reporting they used these techniques.

Our results of this survey tend to confirm the results of the survey by Kester *et al* (1999). One difference, however, is that Kester *et al.* found that the IRR was ranked as being of equal importance to NPV. In our survey, the IRR has lost ground and has a ranking below the Payback techniques. This suggests that companies are not abandoning rules of thumb techniques, but that they are using them in conjunction with DCF techniques.

Table 4.3: Importance of Capital Budgeting Techniques

Superiority of Capital Budgeting Techniques	Number of Water Services Boards	Percentage Responses
Considered some to be more superior	3	50%
Not considered some more superior	1	50%

The respondents were further asked to indicate whether they considered some of the capital budgeting techniques they used to be more superior to others. Whereas 50% of the respondents indicated that they considered some of the capital budgeting techniques more superior, the other 50% indicated that they did not.

Table 4.4: Superiority of Capital Budgeting Techniques used by Water Service Boards

Capital Budgeting Techniques considered more superior	Extent of influence of the listed capital budgeting techniques on management decisions (%)					Mean score
	Not at all	Neutral	Somehow	Much	Very Much	
Payback Period	-	-	-	17	83	4.833
Net Present Value	-	-	-	33	67	4.667
Internal Rate of Return	-	17	17	33	33	3.833
Profitability Index	-	17	17	49	17	3.667
Others	-	17	17	49	17	3.667
<i>S=6</i>						

The respondents who indicated that they considered some of the techniques more superior were asked to rank the techniques and briefly explain the reasons behind the consideration. As can be deduced from table 4.4. 83.333% of the respondent considered payback period to be the most superior technique. The mean was 4.833. The respondents also indicated that the water infrastructure's financing is from concessionary funding in terms of loans or grants and the interest rate is very low (ranges from 1.5% to 2.9%). Other respondents considered Net Present Value the second most superior as per table 4.4. 67% since investments need to be able to sustain themselves in the future. The mean was 4.667. The respondents further listed the other capital budgeting techniques in the following order: - Internal Rate of Return with a mean of 3.833, Profitability Index with a mean of 3.667. and other methods had a mean 3.667. According to

some of the respondents. Net Present Value does not give an indication of the relative productivity or efficiency of the investment in terms of utilisation of critical resource capital, financial Rate of Return was also considered less effective because the Board prices are not determined by the market, but instead, regulated and thus the method is less convincing than the profitability index.

Some respondents who indicated that the organization did not use capital budgeting techniques was provided with a listing of possible factors that would influence non-usage of capital budgeting techniques and asked to indicate the extent to which each of the factors influenced the decision not to use capital budgeting techniques. The responses are summarized and presented in table 4.5 below.

Table 4.5: Factors that Influence Non-Usage of Capital Budgeting Techniques

Factor* that influence non-usage of Capital Budgeting techniques	Extent of influence of the listed factors				
	Not at all	Neutral	Somehow	Much	Very Much
of financial sophistication Water Services Boards					
the difficulty in determining the economic objective functions of Water Services Boards					
the difficulty in estimating an appropriate cost of capital to Water Services Boards					

of financial sophistication by Water Services Boards Management was ranked highest, by the difficulty in estimating an appropriate cost of capital to the Water Services

Boards, while difficulty in determining the economic objective functions of the Water Services Boards was ranked last.

4.3.2 Factors that influence the choice of capital budgeting techniques used by the Water Services Boards in Kenya.

In order to meet the second objective of the study, "To establish the factors that influence the choice of the capital budgeting techniques used by the Water Services Boards in Kenya", the respondents were provided with a listing of some of the key factors considered by organizations when selecting appropriate capital budgeting techniques and asked to indicate the extent to which their respective organizations considered each of the factors in the selection of capital budgeting techniques. The responses are summarized and presented in table 4.3 below.

Table 4.6: Factors that Influence the Choice of Capital Budgeting Techniques

Factors considered in selection of capital budgeting techniques	Extent of influence of the listed factors in selection of capital budgeting techniques (%)					Mean score
	Not at all	Neutral	Somehow	Much	Very Much	
Cost of debt to the Water Service Board, from public or private sources				33	67	4.667
Rate of Return		17		66	17	4.167
Weighted average cost of capital		17	17	33	33	3.833
Weighted average cost of capital		17	17	49	17	3.833
Weighted average cost of capital		17	17	49	17	3.833
Weighted average cost of capital		17	17	49	17	3.833

Findings in table 4.3 show that cost of debt to the Water Services Boards, either from public or private is a factor that was considered in selection of capital budgeting techniques by all the respondent organizations, with 67% of them indicating "very much" and 33% indicating "much", the mean score was 4.667. The Internal Rate of Return is a factor that highly considered in selection of capital budgeting techniques by at least 83% of the respondent organizations, with 17% indicating "very much" and 66% indicating "much". 17% of the respondents were non-committal. The mean score was 4.167.

Average cost of capital for its stakeholders was considered in selection of capital budgeting techniques by at least 83% of the respondents, with 33% indicating "very much" and 33% indicating "much" and 17% indicating "somehow". The mean score was 3.833. Average rate of return on equity invested by the Water Services Boards was considered in selection of capital budgeting techniques by at least 83% of the respondent organizations, with 17% indicating "somehow". 49% indicating "much" and 17% indicating "very much". The mean score was 3.833. Risk associated with the project was considered in selection of capital budgeting techniques by at least 83% of the respondent organizations, with 17% indicating "somehow", 49% indicating "much" and 17% indicating "very much". The mean score was 3.833.

When asked to indicate other factors that were considered in selection of capital budgeting techniques, the responses given are summarized and presented in table 4.4 below (multiple responses were allowed).

Table 4.6: Other factors considered in selection of capital budgeting techniques by the Water Services Boards in Kenya

Other factors considered in selection of capital budgeting techniques	Distribution	
	Frequency	Percentage
the socio-economic benefits of the project to the shareholders (beneficiaries)	2	33
Vision 2030	1	17
The ability of the method to correctly rank competing projects.	6	100
The ability of the method to correctly identify wealth-increasing project.	4	67
The ability of the method to recognize the timing of the cash flows and their relative magnitudes.	4	67
The ease with which the management can understand the results.	5	83

The findings in table 4.6 show that all the respondents indicated that the following are among the other factors considered in selection of capital budgeting techniques by the Water Services Boards include the ability of the method to correctly rank competing projects and the ease with which the management can understand the results. The other factors considered are: - The ability of the method to correctly identify wealth-increasing project and the ability of the method to recognize the timing of the cash flows and their relative magnitudes, as indicated by 67% of the respondents. The others are the socio-economic benefits of the project to the shareholders (beneficiaries), as indicated by 33% of the respondents and Vision 2030, as indicated by 17% of respondents.

4.3.4 The relationship between capital budgeting techniques and organizational performance

Table 4.7: Relationship between Capital Budgeting Techniques and performance indicators

Performance indicators	Impact of Capital Budgeting Techniques on the listed performance indicators in Water Services Boards (%)					Mean score
	Not at all	Neutral	Somehow	Much	Very Much	
Annual Water Demand (£000 cubic meters)				33	67	4.667
Annual Water Consumption ('000 cubic meters)				66	34	4.333
Number of urban water facilities				17	83	4.833
Number of rural facilities		17	17	49	17	3.667
Number of urban water service providers			17	17	66	4.500
Total staff positions				17	83	4.833
Total tilled positions				83	17	3.500
Water sales ('000 cubic meters)				17	83	4.833
Water sales ('000 Kes)				17	83	4.833
Net Assets				67	33	4.333
Operating Profits					100	5.000
Government of Kenya support (as a percentage of revenue)		17	83			2.833

Findings in table 4.7 show that the relationship between capital budgeting techniques and performance is high. All respondent organizations confirmed operating profits improved with

introduction of capital budgeting techniques, with 100% of them indicating very much. The mean score was 5.000. Water sales both in '000 cubic meters and Kenya Shillings improved, with 83% respondent organizations indicating 'very much' and 17% respondent organizations indicating 'much'. The mean score for both was 4.833. Number of urban water facilities increased due to demand of water leading to increased sales both in '000 cubic meters and Kenya Shillings, respondent organizations indicating 'very much' were 83% and 17% respondent organizations indicating 'much'. Itic mean score was 4.833. Number of urban water service provider also increased showing the capital budgeting techniques had an impact on the way of doing business in the water sector, respondent organizations indicating 'very much' were 66% . 17% indicated 'much' and the other 17% indicated 'somehow' . The mean score was 4.500. Interestingly Government of Kenya support (as a percentage of revenue) dipped showing Water Service Boards resolve to operate on commercial basis, respondent organizations indicating 'somehow' were 87% and 17% indicating neutral. The mean score was 2.833

Whereas five of the respondents indicated that capital budgeting techniques had led to improvement in organizational performance. The five respondents further argued that improved access to funding to undertake projects had been realized and cited 3 major projects financed by the World Bank at a cost of Kshs 7 billion. In addition, one respondent argued that the organization has been able to measure the cost of capital against the desired return besides Piping in deciding the best way to finance a project. The respondents were then asked to indicate the type of investment decisions that they used capital budgeting techniques. The responses are summarized and presented in table 4.8 below.

Table 4.8: Distribution of responding firms through corporate dimensions in decision

Disking			
fS/No	Dimension of Capital Investment	Frequency	Percentage
a	Allocating funds for capital investment		
	10 million-40 million	2	33.33
	50 million-100 million	1	16.67
	110 million and above	3	50.00
	Total	6	100
n r ~	Span of years for new project implementation		
	1-5 years	1	16.67
	6-10 years	2	33.33
	Above 11 years	3	50.00
	Total	6	100
c	Target growth rate of firm		
	5-10%	3	50.00
	11-15%	2	33.33
	16-20%	1	16.67
	Above 21 %	0	0
	Total	6	100
d	Source of funds for capital		
	i). Retained earning	1	16.67
	ii) Government Grants	3	50.00
	iii) Long term concessional loans / Governments	2	33.33
	Total	6	100

Table 4.8 (a) above shows how many Water Services Boards allocated money to capital investments. The total number of firms (3) allocated funds in the range of Kshs 110 million and above representing 50% of respondents. 1 Water Services Board allocated between Kshs 50-100 to capital investments, representing 16.67% while 2 respondents allocated money in 10-40 million, representing 33.33%. The outcome of these companies testified to the IKC attached at corporate long term capital projects.

Table 4.6 (b) above is concerned with span for the new project implementation. Because of the economic instability Water Services Boards expectations in terms of profits seemed high within the possible period. One Water Services Board that was involved in new project implementation restricted its period of demand to between 1-5 years (16.67%). Two Water Services Boards supported 6-10 years (33.33%) and the other 3 Water Services Boards were for 11 years and above (50%). Further probing through personal interviews showed that the above scenario was attributed to the nature of the source of funds being concessional loans of between 2.5 - 4 % interest rate and repayable after 10 years from the donor community.

Table 4.6 (c) shows the effect of the companies' growth rate on investment decisions. The majority of 3 Water Services Boards (50%) assigned 5-10 % , Two Water Services Boards (33%) assigned 11 -15 % and only 1 (16.67%) assigned a rate of 16-20%.

Table 4.6 (d) shows preference for sources of funds for capital investment projects. The source of source of funds cannot be over emphasized because, to certain extent the source of capital determined the level of confidence and degree to which risk can be accommodated. Only one Water Services Board utilized retained earnings (16.67%). 3 Water Services Boards preferred Government Grants (50%) while the other two Boards preferred Long term concessional from donor funds and Government funds (33.33%). The findings indicate that the majority of Water Services Boards prefers equity and concessional loans to use for project

CHAPTER FIVE: SUMMARY, CONCLUSIONS, POLICY RECOMMENDATIONS, SUGGESTIONS FOR FURTHER RESEARCH AND LIMITATIONS OF THE STUDY

5.1 Introduction

This chapter presents conclusions drawn from the research findings and the recommendations for practice and for further studies.

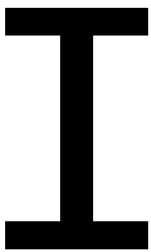
5.2 Conclusions

The importance of the capital investment decision is beyond doubt. All companies realize that the long-term profitability and success of a company lies in its ability to identify and select capital investments that will increase value and will provide the company with the competitive edge that it needs to beat the competition. An important aspect of the investment decision is the ability to identify opportunities within the market. Another key aspect is the ability to determine whether the opportunities that have been identified will actually add value and be profitable. The research done here has focused on the latter aspect.

As a result of this survey are clear. Primary methods such as discounted cash flow methods (i.e. Present Value, Internal Rate of Return and profitability Index) are increasingly being adopted by Services Boards whereas older methods such as non discounted cash flow methods (including payback c.t.c) are still practiced, but they are increasingly being used merely as

secondary methods to support the primary method. Findings of the study show that the problem with selecting an appropriate discount rate for a Water Services Board is complex. Water Services Boards, when selecting the discount rate to be used in capital budgeting, must consider four salient factors identified (i) cost of debt to the Water Service Board, either from public or private sources; (ii) average cost of capital for its stakeholders; (iii) average rate of return on equity invested by the Water Services Boards; and (iv) risk associated with the project. The findings of the study corroborate the literature review in that the listed factors are the same ones identified by Birkofcr *el al* (1987).

The study revealed that dividends and taxation payouts as well as shareholders funds and share capital strongly influenced water services boards' growth and performance when related with retained earnings and credit investment. This is due to the fact that most water services boards would demand higher returns on investment (from the incorporated water companies) to satisfy the other stakeholders such as Development Partners. Local Government Authorities who owned the assets before and the Government. Furthermore, overall strongly positive impact of net cash flows on investment return was also consistent with other findings that net cash inflow should be I regarded as a desired determination of performance, since higher income dictates better investment return and vice versa. The result then showed that low investment return was u signal poor growth performance.



5.3 Recommendations

5.3.1 Policy Recommendations

Taking into consideration the importance of capital investment decisions, it is imperative that the executives who make the decisions use the discounted cash flow methods (Net Present Value, Internal Rate of Return, profitability Index) which are best techniques and tools available to them to ensure that they make informed decisions. Discounted cash flow techniques are not flawless and should be applied with the necessary understanding and discretion. It must be emphasized that the use of discounted cash flow tools is intended to support a more informed decision than otherwise possible.

It must also be borne in mind that it is not only personnel in charge of finance who should understand the investment process. All the divisions of a company provide inputs in the form of estimates needed to evaluate projects. After all, because capital investments have a significant impact on the long-term strategies of the company, they do eventually affect every part within the company.

It must also be said that there are many other factors that must be taken into account when evaluating a capital investment. Legal requirements, environmental laws, strategic factors and the requirement to keep up with technology must all be taken into account. In addition, a prudent decision is made on the basis of one single parameter.

5.3.2 Recommended Areas of Further Research

The findings of this study, it is hoped, will contribute to the existing body of knowledge and form basis for future researchers. The following areas of further research are thus suggested: (1) Whereas the current study focused on responses from the management of the Water Services Boards, future studies should focus on responses from external auditors or the office of the Auditor General; (2) Future studies should seek to establish the nature, extent and adoption profile of capital budgeting techniques in other sectors of the economy in Kenya; (3) Future studies should seek to establish the relationship between the factors affecting choice of capital budgeting techniques and performance of the affected sectors.

4 Limitations of the Study

The first limitation regards the fact that the water Services Boards were incorporated about five years ago (2004) and hence all of them had not even taken full control and inventory of their assets and liabilities. This means the study was limited to the primary information provided by the various Water Services Boards and very little secondary data to avoid making unsubstantiated conclusions. This led to dropping regression analysis due to lack of time series data for at least a period of six years and make substantiated recommendations.

The second limitation regards the fact that time was of essence hence all Water Services Boards were not visited to conduct face to face interviews. This means the study was limited to the two to face interviews conducted, telephone calls made and questionnaires filled by the respective respondents.

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APPENDIX I: LETTER OF INTRODUCTION

University of Nairobi
School of Business
Department of Finance and Accounting
P.O. BOX 30197
NAIROBI

September, 2008

Dear Respondent

BEJLI KEQI'EST FOR RESEARCH DATA.

I am a student undertaking a Masters of Business Administration in the above mentioned university. I am required to submit as part of my course work assessment, a research project report on "THE RELATIONSHIP BETWEEN CAPITAL BUDGETING METHODS AND PERFORMANCE OF WATER SERVICES BOARDS IN KENYA"

To achieve this, your organization is one of those selected to participate in the study. Your input through responding to all the items in the questionnaire will be valuable in order to generate data required for this study. Utmost confidentiality will be observed to ensure that the information will be used purely for academic purpose and your name will not be mentioned in the report. Findings of the study, shall upon request, be availed to you.

Your assistance and cooperation will be highly appreciated.

Yours in advance.

Yours Sincerely,

GEORGE M. LOMBE, GEOFFREY M. NYAYAO

STUDENT -RESEARCHER

MR. MOHAMMED MWACHII

SUPERVISOR

UNIVERSITY OF NAIROBI

APPENDIX II: LISTING OF THE WATER SERVICES BOARDS IN
KENYA

1.	ATI II WATER SERVICES BOARD
2.	COAST WATER SERVICES BOARD
3.	LAKE VICTORIA NORTH WATER SERVICES BOARD
4.	LAKE VICTORIA SOUTH SLRVICES BOARD
5.	NORTHERN WATER SERVICES BOARD
6.	RUT VALLEY WATER SERVICES BOARD
7.	TANA ATHI WATER SERVICES BOARD
8.	I ANA WATER SERVICES BOARD

Source: Water Services Regulator)' Board, June 2008

APPENDIX III: QUESTIONNAIRE

This questionnaire has been designed to collect information from the staff of the Water Services Boards in Kenya and is meant for academic purposes only. The questionnaire is divided into two sections. Please complete each section as instructed. Do not write your name or any other form of identification on the questionnaire. All the information in this questionnaire will be treated in confidence.

SECTION I: BACKGROUND INFORMATION

1. Name of organization _____(OPTIONAL).

2. Please list the products/services you offer to your clients.

3. For how long have you worked in the organization? (Tick as appropriate)

Less than 1 year

Between 1 and 5 years

Between 6 and 10 years

Between 11 and 15 years

16 years and above

4. What is your current position?

5. Please list your key duties and responsibilities

7. If your organization does not use capital budgeting techniques, please indicate the extent to which your organization's non - usage of capital budgeting techniques was influenced by each of the following factors (Tick, as appropriate)

Factors that influence non-usage of Capital Budgeting Techniques	Extent of influence of the listed factors				
	Not at all	Neutral	Somehow	Much	Very Much
	(1)	(2)	(3)	(4)	(5)
Lack of financial sophistication by Water Services Boards <u>Management</u>					
.Difficulty in determining the economic objective functions of the <u>Water Services Boards</u>					
Difficulty in estimating an appropriate cost of capital to the Water Services Boards					

Please list and briefly explain any other reasons as to why your organization does not use capital budgeting techniques?

10. Listed below are some of the key factors considered by organizations when selecting appropriate capital budgeting techniques. Please indicate the extent to which selection of capital budgeting techniques in your organization was influenced by each of the listed factors (Please tick as appropriate)

Factors considered in selection of capital budgeting techniques	Extent of influence of the listed factors in selection of capital budgeting techniques				
	Not at all	Neutral	Somehow	Much	Very Much
	(1)	(2)	(3)	(4)	(5)
Cost of debt to the Water Service Board, either from public or private sources					
Internal Rate of Return					
Average cost of capital for its stakeholders					
Average rate of return on equity invested by the Water Services Boards					
Risk associated with the project					
Others (Specify)					

Any other factors considered (Specify below)

<p>11. (a) Has the usage of capital budgeting techniques led to an improvement in the performance of your organization? Yes (<input type="checkbox"/>) No (<input type="checkbox"/>)</p>				
--	--	--	--	--

(b) If yes, in what way (s)?

(c) If no, why?

12. With respect to your organization, please complete below as regards investment decisions, span of years for new investment, target growth rates of the organization and source of funds for capital (Tick as appropriate)

S/No	Dimension of Capital Investment	Response	
		Yes	No
	Allocating funds for capital investment		
	10 million-40 million		
	50 million-100 million		

110 million and above

Total

Span of years for new project implementation

1-5 years

Above 11 years

Total _____

Target growth rate of firm

5-10%

	11-15%		
	16-20%		
	Above 21 %		
	Total		
d	Source of funds for capital		
1	i). Retained earning		
1.	ii) Government Grants		
	iii) Long term concessional loans / Governments		

13. For what investment decisions do you use capital budgeting techniques?
- All f 1
 1 or certain types I 1
 For investment over Kshs 10 Million [1
 None i 1
14. For what percentage of total corporate capital investment expenditures are capital budgeting techniques applied (based on Kshs)?
15. For what form do these capital budgeting techniques take? Check all applicable
- Payback Period (I
 Average accounting rate of return (either before or after tax). (1
 Minimum rate of discounted cash flow (internal rate of return) 1 1
 Discounted net present value of cash flow 1 1
 Ignore the question 1 1
16. If you use a method requiring discounted cash flows, what do you use as your cost of capital rate (discount rate)?
- Not applicable I 1
 Cost of debt I J
 Weighted average cost of capital (1
 A measure based on past experience 1 1
 Expectations with respect to growth and dividend payout I J
 Return from a risk-free asset plus a premium associated with your risk class
 Another rate (_____/_____) I J
 Ignore the Question \ J
17. What is your numerical value of your cost of capital rate?
- If after-tax rate 1 1
 If pre-tax rate I I
18. Is your required rate of return or cost of capital a:

- Pre-tax ? I 1
Post tax flow ? I I
9. How do you compute the cash flow that you analyze using your required rate (or Cost of capital) on investment (i.e. How do you define cash flow)? is this flow a:
Pre-tax flow?
Post tax flow ? I]
10. How do you assess risk in investment decisions?
Risk is quantified on an individual project basis |]
Risk is assessed subjectively [J
Risk is not assessed (]
Ignore the Question I I
21. Do you assign projects to risk categories that are treated differently in the capital budgeting process?
Yes I 1
No [J
22. If yes, what categories?
i)
ii)
in)
23. Do you use different types of capital budgeting techniques for different classes of risk?
Yes I 1
No []
24. What do you use as the basis for determining the risk of a project?
Ignore risk and use single standard for all projects | |
Assessment of project risk based on subjective evaluation I |
Probability distribution of project's cash flow (]
Covariance of project's cash flow with cash flows of other projects | |
Probability of loss I |
Other, please explain..... [J
Ignore the question (]
25. How do you take risk into account in capital budgeting techniques?
Shortening the required payback period []
Raising the required rate of return j j

Raising the discount rate in computing present value-

None of the above

Ignore the question

Other, please explain

^ I

[j

THANK YOU.