THE RELATIONSHIP BETWEEN CAPITAL BUDGETING TECHNIQUES AND FINANCIAL PERFORMANCE OF COMPANIES LISTED AT THE NAIROBI STOCK EXCHANGE, KENYA

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Abstract

The general objective of the study was to find out the relationship between capital budgeting techniques and financial performance of companies listed in the Nairobi Stock Exchange. The specific objectives of the study were to determine the Capital budgeting techniques used in investment appraisal decisions amongst Companies listed at the Nairobi Stock Exchange. The study also aimed at establishing the relationship between Capital budgeting techniques and the financial performance of companies listed at the Nairobi Stock Exchange. The study employed a survey design to determine the capital budgeting techniques and their relationship with financial performance in companies quoted at the NSE. Primary data was collected through questionnaires which were dropped and picked from the respondents. Secondary data was collected from the published accounts of the companies. The target population consisted of all the 47 companies listed at The Nairobi Stock Exchange as at 30th June 2010. The choice of quoted companies was preferred because they represented the main sectors of the Kenyan economy, and are therefore considered as adequate representation of companies in Kenya. The study used multiple regression analysis to find the association between capital budgeting techniques and the financial performance of companies listed at the Nairobi Stock Exchange. Forecasting model was developed and tested for accuracy in obtaining predictions. The study found out that all the four capital budgeting techniques; payback method, accounting rate of return ,internal rate of return and net present value were being used by the companies listed in

the Nairobi stock exchange. The finding of the study indicated that there is a significant relationship between capital budgeting techniques and the financial performance of the companies registered in the Nairobi Stock Exchange method. This is demonstrated in the part of the analysis where R^2 for the association between capital budgeting techniques and the financial performance of companies listed at the Nairobi Stock Exchange was 76%. It was recommended that a similar study be carried out in other companies not listed in the Nairobi stock exchange to test the same relationship and also in a specific industry to obtain homogenous results.

Introduction: The survival of a company depends very much on its ability to generate returns from its investments. Capital expenditures required in investment normally involve large sums of money and the benefits of the expenditures may extend over the future. According to Mooi and Mustapha (2001), utilizing a systematic capital budgeting process would enhance capital expenditure decisions. Capital budgeting is the process of evaluating and selecting long term investments consistent with the firm owners' goal of wealth maximization. Examples of capital budgeting include expenditure on land, buildings, equipment and permanent additions associated with plant expansion. Investment decisions involve the firm making cash outlay with the aim of receiving, in return, future cash flows. Decisions about buying a new machine, building a factory, extending a warehouse, improving a delivery service, instituting a staff training scheme or launching a new product line are examples of the investment decisions that may be made by a firm. The process would be based mainly on managers' judgment or based on quantitative analysis using scientific and analytical tools.

One of the most significant decisions made by management is that of capital budgeting. Today's companies often make decisions costing millions of shillings for capital improvements. These decisions have the capacity to literally bankrupt a company if they are made without a proper understanding of capital budgeting procedures. Investment decisions are worthwhile if they create value for its owners. Many managers may argue that if the project returns more than what was invested, the project is profitable, but this is simplistic because the argument ignores some

very important elements such as the time value of money. More specifically, the problem of the management should be how to tell if it will create value-in advance. To address this concern, companies use some form of capital budgeting techniques to determine if a project will add the minimum needed value to justify the capital outlay and the risk involved.

Capital budgeting techniques

The most common capital budgeting techniques used are net present value, internal rate of return, payback period, accrual accounting rate of return and the profitability index. The first four techniques are the most popular.

Financial Performance

Financial performance of the companies can be measured by use of accounting information or stock market values in a capital budgeting context. When applying stock market values as a measure of performance, one is interested in analyzing the change in market value. Firm performance is measured over time by using the average stock market change per year. This value is usually obtained by calculating the yearly change in stock price. 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. However, it might be difficult for financial performance to be measured by use of stock price information due to the following reasons; lack of information on investment practices available to shareholders, the more direct impact that changes in capital budgeting practices have on accounting returns and that managers place much higher importance on return on capital and profit growth goals than on shareholder goals.

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 shareholders' wealth. Sophisticated 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. This fact indicates that firms can increase or even maximize their shareholders wealth by using sophisticated capital procedures. Hence from a perspective of the finance theory, the relationship between capital budgeting sophistication and financial performance is expected to be positive. Studies on the relationship between capital budgeting sophistication and financial performance

of a firm have presented mixed results. Some studies found out that there was no consistent significant association between financial performance and capital budgeting techniques (Klammer, 1973; Haka, Gordon and Pinches, 1985). Other studies found out that showed that firms adopting sophisticated capital budgeting techniques had better than average firm financial performance (Moore & Reichert, 1989). Whereas a few studies have been done on the same in Kenya (Olum, 1976; Kadondi, 2002; Khakasa, 2009), there is no evidence on any that has been done on the relationship between capital budgeting and financial performance. The conflicting results on the impact of capital budgeting techniques on financial performance, and lack of a local study on the same, have necessitated this study which seeks to survey the impact of capital budgeting techniques on the financial performance of companies listed at the Nairobi Stock Exchange, Kenya.

Research Objectives

i)   To determine the Capital Budgeting techniques used in investment appraisal decisions amongst Companies listed at the Nairobi Stock Exchange, Kenya

ii)   To establish the relationship between capital budgeting techniques and the financial performance of companies listed at the Nairobi Stock Exchange, Kenya

Research Questions

i) What Capital Budgeting techniques are used in investment appraisal decisions amongst Companies listed at the Nairobi Stock Exchange, Kenya?

  ii) What is the relationship between capital budgeting techniques and the financial performance of companies listed at the Nairobi Stock Exchange, Kenya?

Research Methodology

The study employed a census survey design to determine the capital budgeting techniques and their impact on financial performance in companies quoted at the NSE. The study employed a census survey, because the NSE as of the time of the study had only 47 listed companies, therefore the whole population of the companies was included in this study. The choice of quoted companies was preferred because they represented the main sectors of the Kenyan economy, and are therefore considered as adequate representation of companies in Kenya. In addition, since they are publicly quoted and publish their annual reports, information about the measurement of the financial performance were readily available, unlike those of unlisted companies. The study

covered a period of four years from 2004-2007. The justification for the choice of this period was that the period was considered both current and long enough for any capital budgeting decision to be taken, implemented and results established. The study employed both Primary and secondary data. Primary data was collected through questionnaires which were administered by the researcher. Secondary data was collected from the published accounts of the companies. The published accounts were obtained from NSE library and Capital Markets Authority (CMA). Reliability of the measures was assessed with use of Cronbach's alpha. Cronbach's alpha which allows for measurement of reliability of the different categories. Data obtained were analyzed in general for selected companies listed at the NSE. Regression analysis was used to test the impact of capital budgeting techniques on the financial performance. This study employs a model used by Olawale, F. et al. (2010) and Klammer (1973). The regression equation used was;

$$ROA = \_\alpha + \beta1 \ NPV + \beta2 \ ARR + \beta3 \ PB + \beta4 \ IRR + \beta5 \ Cont + \varepsilon1$$

Where

ROA= Return on assets (profitability)

NPV= the effect in sh.of the present value technique.

ARR= the effect in sh. of the accounting rate of return technique.

PB = the effect in sh. of the payback technique.

IRR = the effect in sh. of the internal rate of return.

Cont. = is a vector of control variables.

α = a constant

$\beta1, \beta2, \beta3, \beta4$ and $\beta5$ are regression coefficients

$\varepsilon1$=   represents the error term.

The statistical package for social sciences will (SPSS) version 17 was used to analyze the data into frequency distribution. The primary data from the questionnaire were analyzed using descriptive statistics, particularly frequencies and percentages. Information then was generalized and summarized using tables and histograms where appropriate.

Results : Response rate

A total of 47 questionnaires were issued out. The completed questionnaires were edited for completeness and consistency. Of the 47 questionnaires used in the sample, 39 were returned.

The remaining 8 were not returned. The returned questionnaires' represented a response rate of 82.9%, which the study considered adequate for analysis.

Distribution of respondents by designation

As can be observed, in Figure 1, the respondents were made up of 61.5% were investment managers, 30.8% were finance managers and 7.7% were risk managers.

Figure 1: Designation Composition
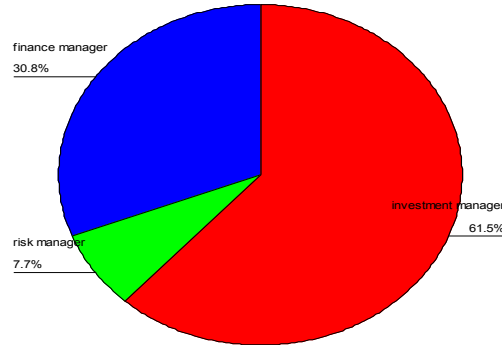
Distribution of respondents by length of Service with organization (years)

The results presented in table 4.1 shows that majority of the respondents (35.9%) had worked in their respective organization for over six years, 33.3% had been in their organization for 4 to 5 years and the remaining 30.8% had worked for 2 to 3 years in their current organizations.

Table 1: Length of Service with organization (years)

Number of service years	Frequency	Percent	Cumulative Percent
2-3 years	12	30.8	30.8
4-5 years	13	33.3	64.1
over 6 years	14	35.9	100.0
Total	39	100.0	

Source: researcher's raw data.

 Distribution of respondents by legal status:

As can be observed, in Figure 2, 69.2% of the respondents were from private companies while 30.8% were from public companies.

Figure 2: Legal status

Public company
30.8%

Private company
69.2%
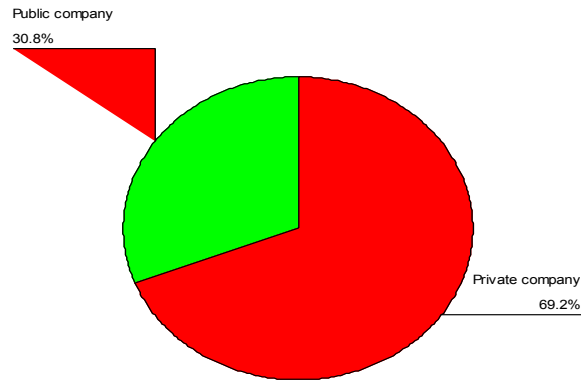
Capital Budgeting Techniques

This section covered information posed to respondents on the following issues; Use of Capital Budgeting Techniques, a major switch in techniques used over the last 5 years, techniques company favor when deciding investment projects to pursue, average proportion of total capital expenditures company made in the last five years, written capital investment guidelines, technique company use to assess a project's risk and approaches used to determine the minimum acceptable rate of return.

Use of Capital Budgeting Techniques

The respondents were to rate how frequently their company's used the following evaluation techniques when deciding investment projects to pursue. As shown in table 4.3.1, payback period was the most frequently used evaluation technique (mean of 3.4872), followed by Internal rate of return (mean of 3.3077), Net present value (mean of 3.0513) and Accounting rate of return (mean of 3.000) respectively. Payback period was frequently used due to its easy of calculation and interpretation as compared to other evaluation techniques.

Table 2. Frequency of use of Evaluation Techniques

	Mean	**Std. Deviation**
Net present value	3.0513	.91619
Internal rate of return	3.3077	.92206
Accounting rate of return	3.0000	.97333
Payback period	3.4872	.85446

Existence of a major switch in techniques used over the last 5 years

As can be observed, in Figure 3, 53.8% of the respondents were of the opinion that their firms had made a major switch in techniques used over the last 5 years while 46.2% of respondents firms had not made a major switch in techniques used over the last 5 years

Figure 3: Existence of a major switch in techniques used over the last 5 years
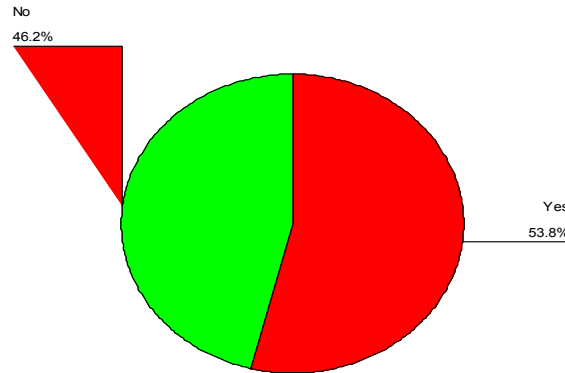
Techniques used when deciding investment projects to pursue

The respondents were to indicate the type techniques their respective company's favour when deciding investment projects to pursue. The findings in table 3.0 indicate that 83.6% of the respondents firms favored net present value techniques when deciding investment projects to pursue, followed by Internal rate of return at 41.0%, accounting rate of return and Payback period at 3.3% respectively.

Table 3.0: Techniques used when deciding investment projects to pursue

	Frequency	Percent	Cumulative Percent
Net present value	17	43.6	43.6
Internal rate of return	16	41.0	84.6
Accounting rate of return	3	7.7	92.3
Payback period	3	7.7	100.0
Total	39	100.0	

Source: researcher's raw Data.

Technique companies use to assess a project's risk The respondents were to rate technique company's used to assess a project's risk. As shown in table 4.0, sensitivity analysis was the most frequently used project risk assessment technique (mean of 3.7852), followed by Scenario

analysis (mean of 3.1026), Simulation analysis (mean of 2.9744) and Decision tree analysis (mean of 2.5897) respectively.

Table 4.0: Technique companies use to assess a project's risk

	Mean	Std. Deviation
Scenarios analysis	3.1026	.91176
Sensitivity analysis	3.7852	.50637
Decision tree analysis	2.5897	.93803
Stimulation analysis	2.9744	1.08790

Approaches used in determining the minimum acceptable rate of return

The findings in results in table 5.0 show that majority (61.5%)of the respondents prefer Cost of equity capital over other approaches in determining minimum rate of returns for investments, followed by weighted average cost of capital at 30.8% rating and cost of debts at 7.7% respectively.

Table 5.0: Approaches used in determining the minimum acceptable rate of return

	Frequency	Percent	Cumulative Percent
Weighted average cost of capital	12	30.8	30.8
Cost of debt	3	7.7	38.5
Cost of equity capital	24	61.5	100.0
Total	39	100.0	

Source: researcher's raw data.

Correlation and Regression analysis

Correlation analysis

Two predictor variable are said to be correlated if their coefficient of correlations is greater than 0.5. In such a situation one of the variables must be dropped or removed from the model. As shown in table 6.0, none of the predictor variables had coefficient of correlation between themselves more than 0.5 hence all of them were included in the model.

Table 6.0: Pearson Correlation coefficients

	ROA	NPV	ARR	IRR	PB	CONT
ROA	1.000					
NPV	.025	1.000				
ARR	.135	.159	1.000			
IRR	.058	-.030	.147	1.000		
PB	.350	.371	.172	.098	1.000	
CONT	.262	-.400	-.116	.098	-.299	1.000

Source: researcher's raw data.

Strength of the model

Analysis in table 7.0 shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) R^2 equals 0.760, that is, CONT, IRR, ARR, PB, NPV explain 76 percent of ROA leaving only 24 percent unexplained. The P- value of 0.001 (Less than 0.05) implies that the model of ROA is significant at the 5 percent significance.

Table 7: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
				R Square Change	F Change	df1	df2	Sig. F Change	F
.872	.760	.754	.05163	.760	4.893	5	33	.001	

Predictors: (Constant), CONT, IRR, ARR, PB, NPV

Table 8 : ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.025	5	.005	4.893	.001
	Residual	.088	33	.003		
	Total	.113	38			

Predictors: (Constant), CONT, IRR, ARR, PB, NPV: Dependent Variable: ROA

The probability value (p-value) of a statistical hypothesis test is the probability of getting a value of the test statistic as extreme as or more extreme than that observed by chance alone, if the null hypothesis H_0 is true. The p-value is compared with the actual significance level of the test and, if it is smaller, the result is significant. The smaller it is, the more convincing is the rejection of the null hypothesis. ANOVA findings in table 8.0 shows that there is correlation between the predictors variables (CONT, IRR, ARR, PB, NPV) and response variable (ROA) since P- value of 0.001 is less than 0.05.

Regression Analysis

The established multiple linear regression equation becomes:

$Y = 0.001 + 0.038X_1 + 0.027X_2 + 0.042X_3 + 0.025X_4 + 0.019X_5$

Where

Constant = 0.001, shows that if CONT, IRR, ARR, PB, NPV were all rated as zero, ROA rating would be 0.001

X_1= 0.038, shows that one unit change in NPV results in 0.038 units increase in ROA

X_2= 0.027, shows that one unit change in ARR results in 0.027 units increase in ROA

X_3= 0.042, shows that one unit change in IRR results in 0.042 units increase in ROA

X_4= 0.025, shows that one unit change in PB results in 0.025 units increase in ROA

X_5= 0.019, shows that one unit change in CONT results in 0.019 units increase in ROA.

Ranking of the individual independent variables, it shows that, IRR is highly related with ROA, followed by NPV, ARR, PB and controlled variables respectively.

Table 9: Coefficients of regression equation

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	0.001	0.073		0.0136986	0.994
NPV	0.038	0.014	0.191	2.7142857	0.003
ARR	0.027	0.012	0.149	2.2500	0.004
IRR	0.042	0.011	0.063	3.8181818	0.001
PB	0.025	0.011	0.365	2.2727273	.000
CONT	0.019	0.009	0.253	2.1111111	0.04

Conclusion

The study shows that sensitivity analysis is highly favored when carrying out risk analysis. The implication for corporate managers is that accept-reject decisions may be biased in favour of high-risk investments and against low-risk investments, with the possibility that poor high-risk investments will be accepted and good low risk investments will be rejected. The results of the regression analysis show that the capital budgeting techniques significantly affect firm performance, measured by ROA. Ranking of the individual independent variables, showed that, IRR is highly related with ROA, followed by NPV, ARR, PB and controlled variables respectively .Theoretically, the use of sophisticated capital budgeting techniques should increase the effectiveness of the firms' investments decision making. Thus, the results of this study concurred with the theory and the previous studies.

It is recommends that proper understanding of the demand placed by implementation of these projects on the resources of a firm should be well assessed before implementation. It is important

for the management of the companies to get involved in training and skill development especially in areas of capital budgeting and investments. Training consultants could be used to train the employees who will be advising the management on the best investment alternatives.

In addition, low levels of financial literacy can impact the degree to which companies use investment appraisal techniques.

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