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Capital Budgeting Techniques and Profitability of Manufacturing and Allied Firms Listed at the Nairobi Securities Exchange

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Abstract

Purpose: *The manufacturing sector has been a big focus in the country's development agenda, yet it has stagnated at 10% contribution to the GDP over the years. The study aim was to establish the capital budgeting techniques and Profitability levels among manufacturing and allied firms listed at the Nairobi Securities Exchange.*

Methodology: *Both the descriptive and longitudinal research designs were employed. The population was made up of 7 manufacturing and Allied firms listed at the NSE. Structured questionnaires were used to collect primary data which was administered to staff in charge of risk, investment, or finance. Additionally, secondary data which constitutes the published financial statements was downloaded from the firm's website. The secondary data covered a period of 5 years from 2016-2020. Descriptive statistics was used to analyze quantitative data by way of tables, figures, charts, and percentages.*

Findings: *The study found that capital budgeting techniques are embraced by the manufacturing and Allied organizations with Payback Period and Internal Rate of Return being highly preferred. The study also found that capital budgeting techniques do not significantly influence profitability of manufacturing and allied firms listed at the NSE in Kenya.*

Study Implication: *The study recommends that staff should be trained and involved in the capital budgeting process of the organization. Management should also allocate full-time staff to capital investment analysis in order to harness all the expertise at its disposal for better decision making.*

Keywords: Capital Budgeting techniques, Manufacturing Firms, Profitability

Introduction

Capital budgeting is a tool modern firms use to help minimize cost and maximize revenue and in turn generate profit and return for the capital investments undertaken by the organization. Capital budgeting decisions involves outlays of big investment of Capital and are expensive and irreversible. Businesses exist to make profit and maximize on shareholders wealth (Borad, 2019). Capital budgeting is one means by which a firm can achieve the goal of shareholder wealth generation. Capital budgeting decisions in manufacturing firms include acquisition of new assets, replacement of existing ones or expansion of facilities, (Farah and Altinkaya, 2018). The long-term aim of capital investments is to find profitable opportunities for the company to promote business growth. Capital budgeting techniques help to evaluate investment opportunities that the firm may be interested in, and when done right it improves long term profitability and growth of the business.

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There are two theories that will be discussed which look at the correlation between capital budgeting techniques, investment decisions and profitability in a firm. They include Contingency theory and Real Options theory. Contingency theory is a management theory that states that there is no one best management approach. Pike (1986) advances that the choice of a capital budgeting method is dependent on the environment the organization operates in. The management must settle on the capital budgeting technique that best suits its internal and external factors. The capital budgeting policy of the organization should be reflective of the objectives of the firm and should consider the challenges that the firm may go through because of internal and external factors. These external and internal factors include environmental uncertainty, leadership style, financial status and organizational structure and therefore management must be aware of all these different challenges even as they settle on a capital budgeting technique. Real options theory advanced by Myers (1977) gives an alternative to usage of DCF techniques in appraisal of investment of tangible assets. It introduces flexibility that a firm may accrue due to a choice to abandon or invest in a project in future. This theory gives another route that an organization can take while choosing a project and gives an alternative to counter challenges that are experienced when traditional capital budgeting techniques are employed.

The research was conducted on manufacturing and Allied organizations listed at the Nairobi Securities Exchange (NSE). The manufacturing industry is the second biggest contributor to GDP only behind the Agricultural sector and the firms listed give a very good representation of the economy. This paper undertook to establish the capital budgeting techniques among the manufacturing and allied firms listed and the effect of the same on profitability. There are a total of 9 manufacturing and allied sector organizations listed at the NSE. The manufacturing industry is one of the Important Sector in Kenya and is part of the focus in the current government's big four Agenda. The contribution of the manufacturing sector has stagnated at an average of 10% according to Kenya Business Guide 2018 report by Kenya Association of Manufacturers. The current government had set a target of 15% GDP Contribution by 2022 under the Big four Agenda which will likely not be achieved as per current trends. The manufacturing sector is the second main contributor to the economy behind the Agricultural sector and hence the focus on it as part of growth opportunity. The sector's nature requires heavy investment in capital machinery and therefore the concept of capital budgeting will be well demonstrated.

Sophisticated capital budgeting techniques as demonstrated by use of discounted cash flow in computation of capital budgeting has become more preferred tool across the world. Studies done in North America and UK have substantiated this, (Bennouna et al., 2010). Various studies done in Kenya such as Namahoro et al. (2019), Kinyua (2018), Yator (2018), Irungu (2014) and Munyao (2010) among others have also found that DCF techniques are preferred. While the use of discounted capital budgeting techniques is generally expected to improve profitability of the firm, the studies done locally and abroad have found either no relationship at all, a positive relationship or a negative relationship between the two variables.

Namahoro et al. (2019) found a positive correlation between NPV, ARR, IRR and Payback Period and financial performance of manufacturing organizations listed at the NSE. Kinyua (2018) established a weak negative correlation between NPV and financial performance and a weak positive relationship between IRR, PBP and ARR and financial performance of manufacturing companies listed at the NSE. Munyao (2010) and Yator (2018) found a correlation between capital budgeting techniques and financial performance for firms listed at the NSE whereas Irungu (2014) established no significant correlation between the two variables. Axernold et al. (2002) established a negative correlation between capital budgeting sophistication and financial performance and recommended taking a contingency theory approach to help understand this relationship better.

Research Objectives

(i) To establish capital budgeting practices among manufacturing and allied firms listed at the Nairobi Securities Exchange.

(ii) To establish capital budgeting techniques and Profitability levels of Manufacturing and allied firms listed at the Nairobi Securities Exchange.

Literature Review

Different theories relating to capital budgeting have been advanced across the years. For this study, the theories we were looking at include Contingency theory and Real Options Theory. Contingency theory advances that the choice of capital budgeting technique should depend on the specific factors that are unique to the situation of the organization whereas Real options theory proposes that the organization can have the flexibility of investing or abandoning future capital projects.

The Contingency Theory

Contingency theory as applied in capital budgeting was advanced by Richard H. Pike (1986) and opines that there is no best way a corporation can be organized or run but the best outcome is dependent on both internal and external circumstances an organization may find itself in. Pike states that traditional capital budgeting approaches always assumed that adoption of formalized and sophisticated capital budgeting will lead to better resource allocation. However, studies done by scholars such as Klammer (1973) find this assumption indefinite.

Rosenweig (1981) studied 146 firms across the UK with the contingency framework approach to examine the capital budgeting process to establish the effect of environmental and company specific factors on capital budgeting. The study finds that a company's investment process is impacted by various variables in the form of the external environmental, organisational structure, financial strength, and leadership style.

Axelsson et al. (2002) in their study on Capital budgeting sophistication and performance of organisations listed at the Stockholm Stock Exchange reiterated Pike's stance that the capital budgeting efficiency of a technique is dependent on its fit with the organization rather than its sophistication. However, they found a challenge incorporating contingent factors in their study as the contingent factors were firm specific while their study was carried out across various industries. In conclusion this theory brings to light internal and external factors that may influence organisational performance despite the capital budgeting techniques employed by the management. Criticism of the contingency approach is that it gives decision makers too much leeway to make capital budgeting choices by implying that capital budgeting decisions should be made as the situation dictates.

The Real Options Theory

The concept of real options was proposed by Stewart Myers in 1977. Real options apply in investment of tangible assets whereby the firm has an opportunity in the future to invest in a project or abandon it entirely. This gives the firm more flexibility as compared to traditional investment theory which proposes that the firm takes the project with a positive NPV.

Myers (1984) indicated that smart managers would only accept positive or negative NPV if they can identify the reason as there is a danger of random error in calculations. He derived four challenges that application

of DCF will encounter including approximating the discount rate, the project cash flow, the project's impact on other cash flows, and the projects impact on future activities. Two important pitfalls of DCF identified by Myers is that DCF is not useful in valuing companies with intangible assets or significant growth opportunities, or those in pure research and development. The above three scenarios according to him are better valued by option valuation.

Chance and Peterson (2002) argue that real options valuation shows advantages such as managerial flexibility that may be available in investments which may not be factored in traditional methods of valuation such as DCF. Arnold and Shockley (2003) state that once market conditions are arbitrage free and managers are price takers, DCF or option pricing can be used in valuing illiquid investment assets. This theory brings to light the use of Real options an alternative or together with DCF techniques in valuation of potential new investments. Criticism of real options theory is that managers and other decision makers may find it too complex and there is a risk of sub-optimal exercising of options, (Copeland and Tufano, 2004).

Empirical Studies

Various Research papers have been published in Kenya and abroad regarding capital budgeting practices of firms and others have tried to establish if the techniques have an effect on the financial performance. The emphasis has been on adoption of advanced capital budgeting techniques for analyzing investments. International and local studies alike have highlighted the prominence of DCF techniques as a preferred method in capital budgeting.

Arnold and Hatzopoulos (2000) surveyed the adoption of modern investment appraisal techniques and the continued use of traditional techniques alongside DCF techniques in UK Firms. The study was conducted on 300 companies of which 32.4 % responded. The research found that IRR & NPV was used by 90% of SMEs whereas NPV was used by large firms at 97% while IRR is employed by 84%.NPV was found to be a more popular DCF method than IRR. The adoption of risk analysis technique was also found to be low.

Graham and Harvey (2001) studied corporate practices of firms in the US by surveying 392 chief financial officers (CFOs). The CFOs were questioned on the capital budgeting techniques used in the firm. NPV was top at 74.9 and IRR at 75.7%. Others used payback method at 56.7 %. The study confirms that companies use multiple approaches to evaluate capital projects. The study also found that larger firms (sales over $1

billion) use a different approach as compared to smaller firms (sales less than $ 1 million). Small firms used payback approach more while large firms used more of NPV and IRR. The study also found that companies with higher debt portfolio are inclined to use IRR and NPV compared to firms with lower debt portfolio. Firms that had CEOs with master's in business administration were inclined to use NPV than non-MBA CEOs.

Ryan and Ryan (2002) studied Fortune 1000 companies in the United States on their capital budgeting decisions. NPV ranked highest at 96%. Firms with more financial resources for capital budgeting prefer NPV and IRR. PBP was ranked third at 74.5% while discounted payback model was employed by 56.7% of the companies. PI was used by 43.9%, ARR by 33.3% and lastly MIRR at 21.9%. Risk analysis techniques of sensitivity analysis and scenario analysis were also highly used. Cash flows adjusted for inflation was used by 46.6% firms regularly. Discounted capital budgeting techniques (DCF) were favoured over non-DCF techniques reflecting sophistication in the capital budgeting process. Most respondents concurred that the cost of capital was best calculated by using the weighted average cost of capital (WACC) approach.

Irungu (2014) in her study of listed firms at the NSE established that most companies used NPV as their capital budgeting technique followed by PBP then IRR. The ARR was used by several companies though not preferred. The study also found that no company switched budgetary techniques. The study recommends staff training on capital budgeting as most of the response showed a lack of knowledge.

Namahoro et al. (2019) conducted a similar study on capital budgeting techniques and financial performance of manufacturing firms listed at the NSE. The study looked at the individual effect of the budgeting methods on performance of the organization by correlating the variables. The outcome was that NPV, ARR and PB positively and significantly affected financial performance while IRR affected financial performance positively but not significantly. Firm size was found to be a partial moderator of relationship between capital budgeting techniques and financial performance of the firms.

Ahmed (2013) in his study of determinants of capital budgeting methods in companies listed at the Dubai Financial Market indicated that industry has a big effect on the adoption of capital budgeting methods. He noted that organizations in the manufacturing sector will more likely adopt recommended practices because

of the huge capital investments. The Study noted that various factors such as size and profitability of the organization, the generated revenues, the liquidity level, project familiarity, level of expenditure in the project, the debt level and education levels of decision makers plays a huge role in the choice of capital budgeting methods. The study found a positive relation between profitability, size of the firm, leverage, and revenue with the NPV, IRR, PB and PI.

Summary of Literature Review

The objective of any firm is to maximize shareholder's wealth. The adoption of advanced capital budgeting techniques is expected according to finance theory to affect the company's financial performance. Various studies have been carried out regarding this topic with varying results. Klammer (1973) did not establish a clear correlation between capital budgeting techniques and financial performance. His study suggests that there are other variables such as labour relation, executive recruitment and training, product development and marketing may have a greater effect on profitability. Munyao (2010) found a strong correlation between capital budgeting methods and firm's financials as measured by ROA. His research established a correlation between IRR, NPV, ARR and PBP as related to ROA. Namahoro et al. (2019) also established a positive correlation between NPV, ARR, IRR and PB with financial performance of manufacturing firms. Irungu (2014) found no correlation between capital budgeting methods and organization's performance. However, NPV and ARR were highly related to ROA while PBP and IRR were negatively related therefore giving mixed results. The biggest gap in local studies was that the determining factor of selecting one technique over the other was not fully explored and therefore this study sought to include this topic.

Methodology

In this paper, both the descriptive and longitudinal research design was employed. A descriptive study helps to describe the variables in the study, (Sekaran, 2003). Akhtar (2016) defines descriptive design as helping to describe social events, structure and situations and is also referred to as statistical research. A longitudinal study is whereby data on dependant variable is gathered over a two point or more period, (Sekaran, 2003). These two designs clearly capture the nature of the research as one helps to describe the variables while the other captures the time frame of the study. The descriptive design was used to help understand capital budgeting techniques and profitability of manufacturing and allied companies listed at the NSE whereas the longitudinal research design explains the 5-year period of 2016 to 2020 which the study took place. This design follows that of similar studies on this topic such as (Irungu, 2014).

There were 9 manufacturing and Allied firms listed at the NSE as of 18th August 2021. The population was made up of only 7 as two of them, Mummies Sugar Co Ltd and Eveready East Africa Ltd were going through a prolonged financial difficulty. Since these companies are publicly quoted, a published financial statement about them were readily available. Structured questionnaires were deployed to collect primary data which was administered to management staff in charge of Risk, Investment, or finance. This data was on capital budgeting practices and techniques of the firm. Additionally, secondary data which constitutes the published financial statements is to be obtained from the NSE library or/and downloaded from the firm's website. This data provided information on financial performance and more so profitability of the firms. The secondary data covered a period of 5 years from 2016-2020.

Descriptive statistics was used to analyse quantitative data which showed relationships between variables by way of tables, charts, and percentages. Inferential statistics through chi-square statistics also helped establish relationship between the variables.

Findings and Results Discussions

Primary data was collected through structured questionnaires while secondary data which consisted of financial statements was downloaded from the firm's website. The study targeted one respondent from each of the manufacturing firms and was presented through frequency tables. The respondents were required to highlight whether their organization use capital budgeting techniques to appraise investments. The outcomes are as shown in Table 1.

Table 1: Use of Capital Budgeting Techniques to Appraise Investments

Category	Frequency	Percent
Yes	7	100%
No	0	0%
Total	**7**	**100%**

From the results, 100% of the respondents indicated that their organization uses capital budgeting techniques to appraise investments.

The respondents were further required to indicate if their organization has a capital budgeting manual to guide the process. The outcomes are as indicated in Table 2.

Table 2: Capital Budgeting Manual to Guide the Process

Category	Frequency	Percent
Yes	6	86%
No	1	14%
Total	**7**	**100%**

From the outcomes, 86% of the respondents indicated that their organization has a capital budgeting manual to guide the process while 14% indicated that their organization does not have a capital budgeting manual. The respondents were required to highlight the frequency of which the firm uses the below capital budgeting techniques when evaluating investment projects. The outcomes are as indicated in Table 3.

Table 3: Frequency of Use of Capital Budgeting Techniques

Category	Always (1)	Almost Always (2)	Almost Never (3)	Never (4)
Payback period (PB)	6(86%)	1(14%)	0(0%)	0(0%)
Internal Rate of Return (IRR)	6(86%)	1(14%)	0(0%)	0(0%)
Net present Value (NPV)	2(29%)	5(71%)	0(0%)	0(0%)
Accounting Rate of Return (ARR)	1(14%)	5(71%)	1(14%)	0(0%)

From the findings, IRR and Payback Period were highly used at (86%) always. This was followed by NPV and Accounting Rate of Return both tied at (71%) almost always. Accounting Rate of Return was the least favored at (14%) almost never.

The respondents were requested to indicate the capital budgeting techniques that the firm favor when selecting an investment project to pursue. The outcomes are as demonstrated in table 4.

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Table 4: Capital Budgeting Techniques

Category	Frequency	Percent
Payback period (PB)	6	55%
Internal Rate of Return (IRR)	4	36%
Net present Value (NPV)	0	0%
Accounting Rate of Return (ARR)	1	09%
Total	**11**	**100%**

Some firms indicated more than one favored capital budgeting technique therefore bringing the total number of entries to 11. From the outcomes, 55% of the participants indicated that their firm favored payback period followed by IRR at 36%. Surprisingly, none of the respondents preferred NPV whereas 9% Preferred Accounting Rate of Return.

Factors Determining Capital Budgeting Technique Selection

The respondents were requested to indicate the factors that influence the choice of capital budgeting technique selected. The factors mentioned include ease of understanding by the management and staff, little need for assumption in calculations, ease of use by staff, nature of the investment, the amount of capital required, risk factor and source of financing. The results are shown in table 5, 6 and 7.

The respondents were requested to indicate which approaches the firm uses to determine the discount rate to appraise proposed capital investments projects. The outcomes are as demonstrated in Table 5.

Table 5: Approaches Used to Determine the Discount Rate

Category	Frequency	Percent
Cost of Debt	4	44.5%
Weighted Average Cost of Capital	4	44.5%
Cost of Equity	1	11%
Arbitrary Chosen Figure	0	0%
Total	**9**	**100%**

Cost of debt was tied with Weighted Average Cost of Capital as the most used discounting technique at 44.5%. Cost of equity was third at 11% while none of the firms used arbitrary chosen figure.

The respondents were required to highlight the number of staff who have been assigned full-time to capital budgeting analysis. The outcomes are as illustrated in Table 6.

Table 6: Number of Staff Assigned to Capital Budgeting Analysis

Category	Frequency	Percent
None	6	86%
1 to 2 Staff	1	14%
3 to 5 staff	0	0%
6 and above staff	0	0%
Total	**7**	**100**

From the results, 86% of the respondents indicated that they have not assigned staff to capital investment analysis whereas 14% indicated that they have assigned 1 to 2 staff full-time to capital budgeting analysis respectively. Most of the capital budgeting decisions as explained by one Manager were done at Management and Board Level and therefore no staff was assigned full time to it.

Post Audit Analysis

The respondents were required to indicate whether their firm conducts a post-audit on major capital expenditure. The outcomes are as demonstrated in Table 7.

Table 7: Conducting of Post-Audit on Major Capital Expenditure.

Category	Frequency	Percent
Yes	7	100%
No	0	0%
Total	**7**	**100%**

From the outcomes, 100% of the respondents indicated that their firm conducts a post-audit on major capital expenditure.

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Profitability

ROA was used as a measure for profitability of the listed Manufacturing and Allied companies. The data was extracted from the published financial statements and the findings are as shown in Figures below.

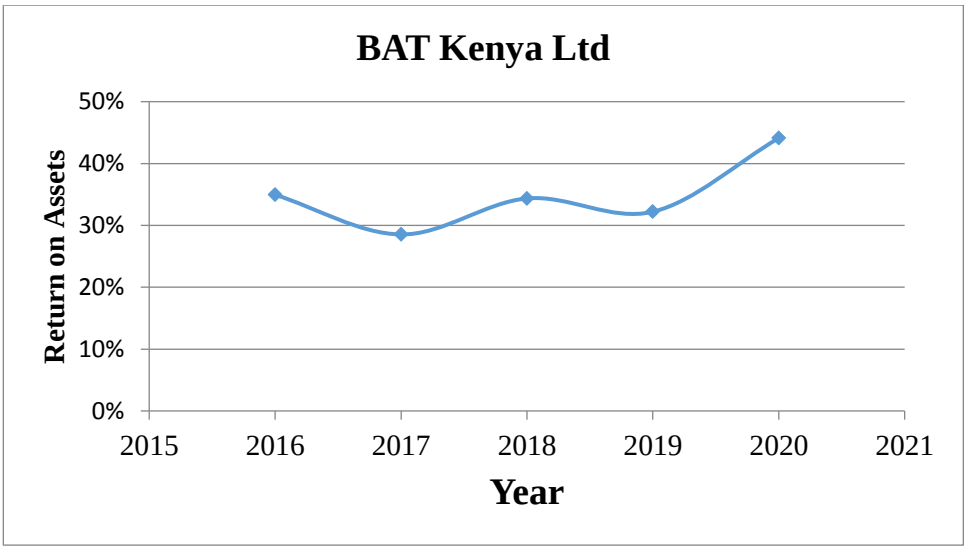

Figure 1: ROA for BAT Kenya Ltd

From the findings, British American Tobacco Kenya Ltd had the highest ROA starting off at 35% in 2016 with fluctuations throughout the years and closing at 44% in 2020.

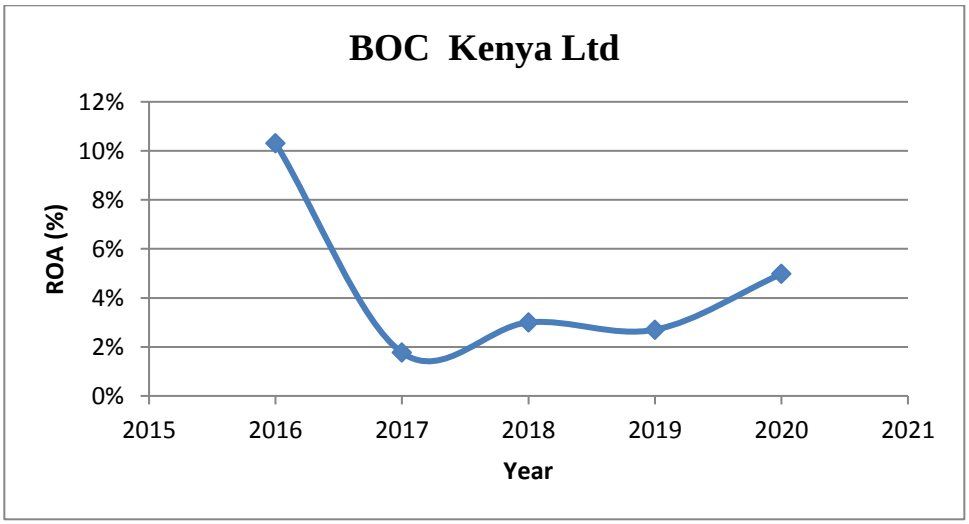

Figure 2: Return on Assets for BOC Kenya Ltd

BOC Kenya started off strongly with an ROA of 10% in 20216 but had a sharp decline to 2% in 2017 and has slowly picked up since closing off at 5% in 2020.

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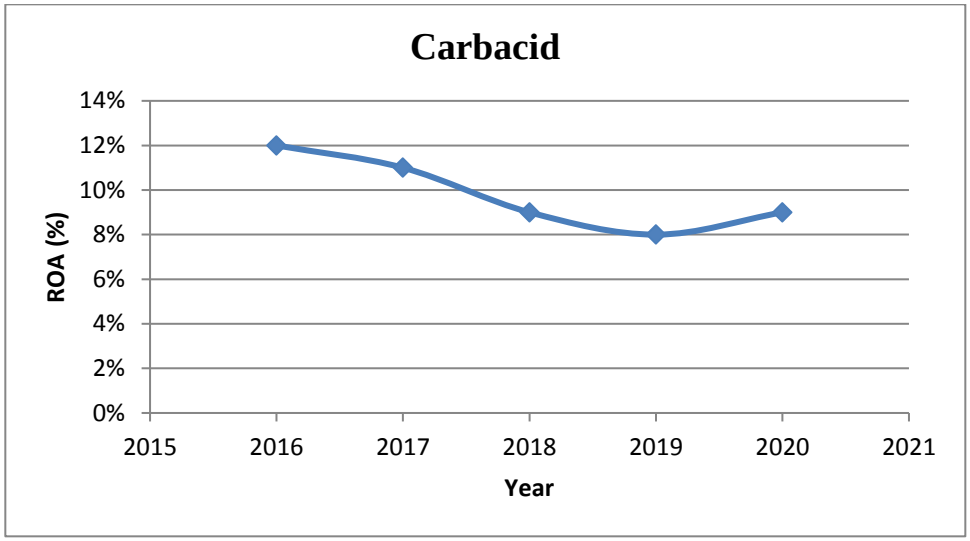

Figure 3: Return of Assets for Characid

The ROA for Carbacid started off strongly at 12% in 2016 and has steadily decreased to a low of 8% in 2019 and slightly picked up to close at 9% in 2020.

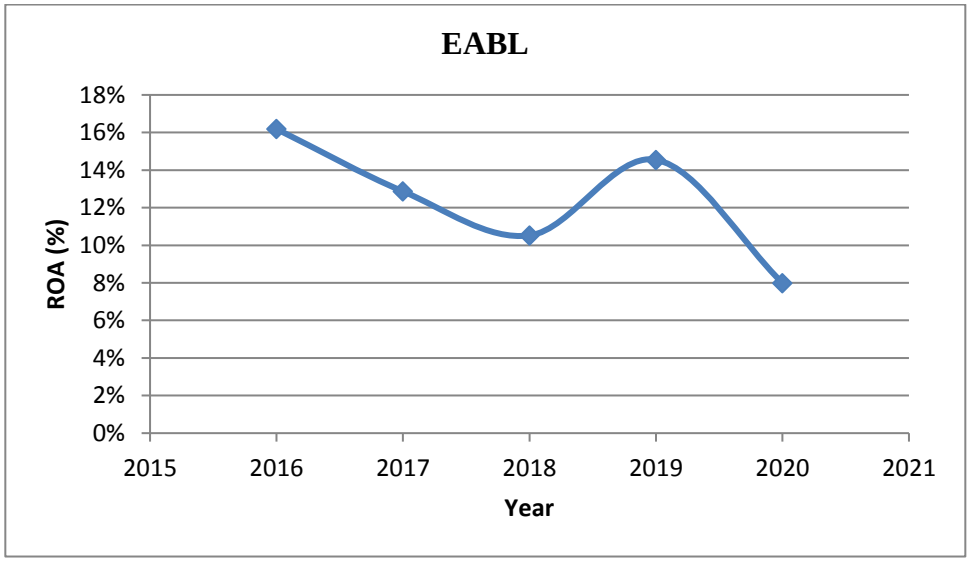

Figure 4: Return on Assets for EABL

The ROA for EABL started off at a high of 16% in 2016 and steadily declined picking up again at 15% in 2019 and then sharply declining to close off at 8% in 2020.

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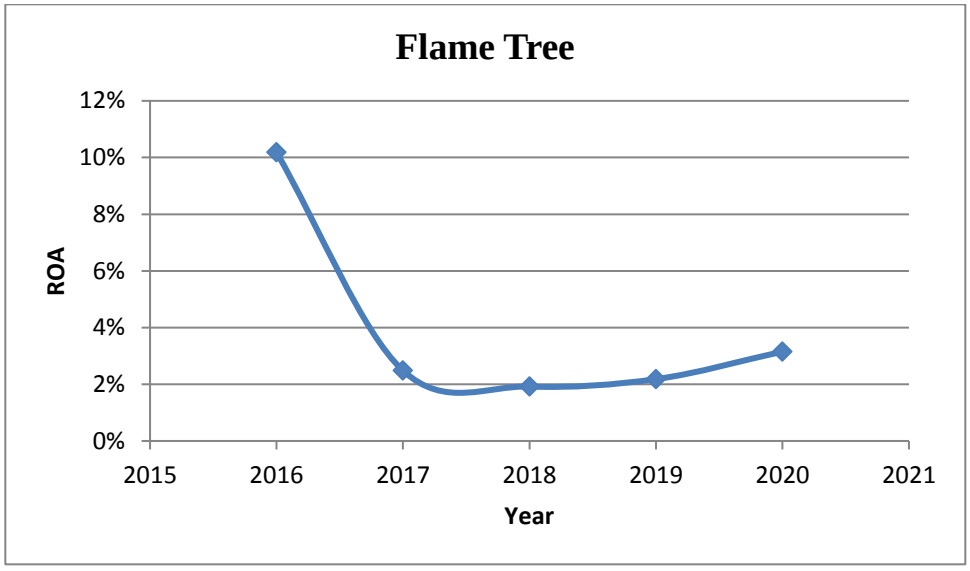

Figure 5: Return on Assets for Flame Tree Company

The ROA for Flame Tree Ltd started off at a high of 10% sharply declining to close off at 3% in 2020.

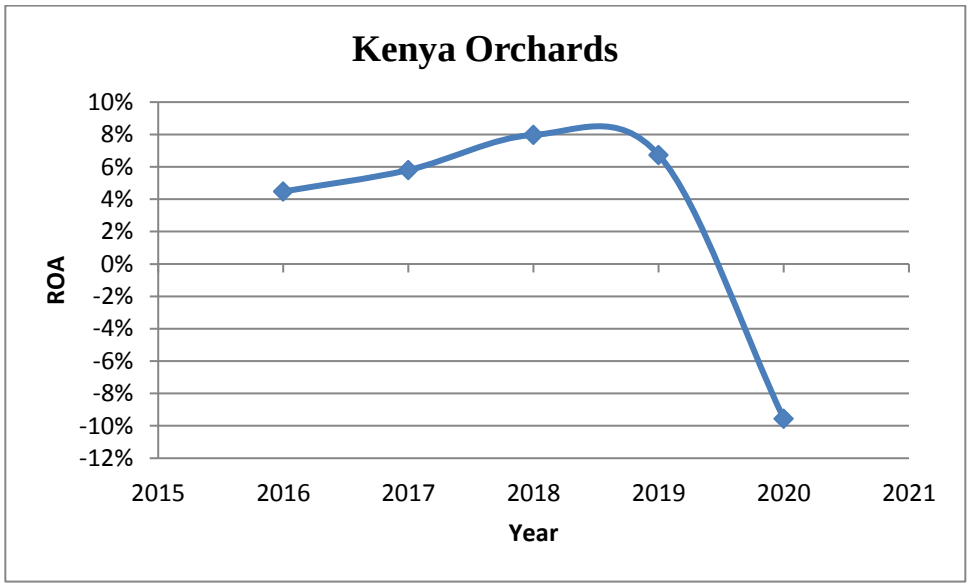

Figure 6: Return on Assets for Kenya Orchards Ltd

The ROA of Kenya Orchards started off at 4% in 2016 and steadily increased to 8% in 2018 but took a sharp decline to close off at -10% in 2020.

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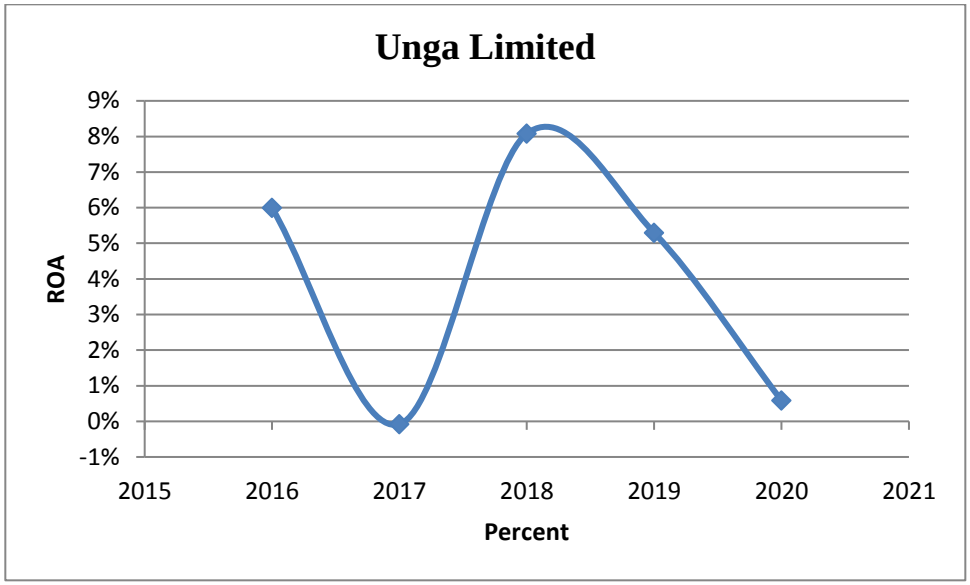

Figure 8: Return on Assets for Unga Ltd

The ROA of Unga Ltd started off at 6% in 2016 fluctuated throughout the years closing at 1% in 2020.

Chi-square Test on Capital Budgeting Techniques and Profitability

Table 8: Capital Budgeting Techniques and Profitability

Capital Budgeting Techniques	**ROA Status**	**Categories**	**Observed**	**Expected**
Payback period	High	Always	6	5.1
		Almost Always	0	0.9
	Medium	Always	17	16.3
		Almost Always	2	2.7
	Low	Always	7	8.6
		Almost Always	3	1.4
Pearson chi2(2) = 3.2360 PR = 0.198				
Likelihood-ratio chi2(2) = 3.7040 PR= 0.157				
Cramér's V = 0.3041				
Capital Budgeting Techniques	**ROA Status**	**Categories**	**Observed**	**Expected**

Internal Rate of Return	High	Always	6	5.1
		Almost Always	0	0.9
	Medium	Always	17	16.3
		Almost Always	2	2.7
	Low	Always	7	8.6
		Almost Always	3	1.4
Pearson chi2(2) = 3.2360 Pr = 0.198				
Likelihood-ratio chi2(2) = 3.7040 P r= 0.157				
Cramér's V = 0.3041				
Capital Budgeting Techniques	**ROA Status**	**Categories**	**Observed**	**Expected**
Net present Value	High	Always	1	1.7
		Almost Always	5	4.3
	Medium	Always	7	5.4
		Almost Always	12	13.6
	Low	Always	2	2.9
		Almost Always	8	7.1
Pearson chi2(2) = 1.4135 Pr = 0.493				
likelihood-ratio chi2(2) = 1.4559 P r= 0.483				
Cramér's V = 0.2010				
Capital Budgeting Techniques	**ROA Status**	**Categories**	**Observed**	**Expected**
Accounting Rate of Return	High	Always	1	0.9
		Almost Always	5	4.3
		Almost Never	0	0.9
	Medium	Always	4	2.7
		Almost Always	12	13.6

		Almost Never	3	2.7
	Low	Always	0	1.4
		Almost Always	8	7.1
		Almost Never	2	1.4
Pearson chi2(2) = 3.5811 Pr = 0.466				
Likelihood-ratio chi2(2) = 5.7581 P r= 0.218				
Cramér's V = 0.2262				

Chi-Square test for Association

From the findings in Table 8, each Capital budgeting technique shows no significant association to profitability of the Manufacturing and Allied firms with PB (χ 2 =3.236, df =2, p>0.05), IRR (χ 2 =3.236, df =2, p>0.05), NPV (χ 2 =1.414, df =2, p>0.05), ARR (χ 2 =3.581, df =2, p>0.05). We can therefore derive from the result that there is no significant effect of capital budgeting techniques on profitability. Hence, the aim of the paper was to establish Capital budgeting techniques and profitability of manufacturing and Allied companies listed at the NSE. All the firms surveyed adopted capital budgeting methods to appraise investments. Majority of the firms preferred Payback Period at 55%, IRR at 36% and ARR at 9%. Previous studies done on Capital budgeting Techniques on firms listed at the NSE by Yator (2018) and Irungu (2014) found NPV to be a leading technique but the results in this study did not rank NPV highly and it was not a preferred technique among the manufacturing and Allied firms listed.

The second objective was to find out factors influencing the choice of capital budgeting techniques. The factors mentioned include ease of understanding by the management, little need for assumption, ease of use by staff, applicability to the investment, nature of the investment, the amount of capital required, risk factor, source of financing and the amount of investment needed. These findings echo the Contingency theory sentiments that the techniques used depend on internal and external factors that the organization operates in. As reiterated by Axelsson et al. (2002) in their study on Capital budgeting sophistication and performance of organizations listed at the Stockholm Stock Exchange who stated that capital budgeting efficiency of a technique is dependent on its fit with the organization rather than its sophistication.

WACC and cost of debt were employed to determine the discount rate to appraise proposed capital investments projects at 44.5% for each and 11% for equity. This is in agreement with the study by Ryan and Ryan (2002) in their paper on Fortune 1000 Companies in the United States where majority of

respondents preferred WACC. Yator (2018) in her study however, found cost of equity to be the most preferred appraisal technique.

Majority of the firms at 86% did not assign full time staff to capital budgeting analysis and this was because capital budgeting decisions at most companies are made at Management and Board Level. This finding agrees with Yator (2018) and Irungu (2014) who found that most organizations did not assign staff and did not provide training to staff on capital budgeting. This trend has not changed over the years. All the firms conducted a post audit analysis on major capital expenditure projects.

Conclusions and Recommendations

The research established that the Manufacturing and Allied companies listed in the NSE use capital budgeting techniques to appraise investments and majority of them have a capital budgeting manual to guide the process of capital budgeting. Further, most of the firms favour payback period and IRR when appraising capital projects to undertake.

The study also revealed factors determining capital budgeting technique selection in different organisations which include ease of understanding by the management, little need for assumption, ease of use by staff, applicability to the investment, nature of the investment, the amount of capital required, risk factor and source of financing. WACC and cost of debt were mostly used to determine the discount rate to appraise proposed capital investments projects. Majority of the firms have not assigned full time staff to capital budgeting analysis on major capital expenditure.

Results from the chi-square statistic test found that capital budgeting techniques do not significantly influence profitability of manufacturing and Allied organisations listed at the NSE. This finding is similar to that of Klammer (1973) and Irungu (2014) in their respective papers on capital budgeting methods and financial performance of organisations.

This study has highlighted the importance of contingent factors which include the risk of the investment, ease of use by staff, ease of understanding by management, less assumptions required, nature of investment and source of financing as important in the capital budgeting process. The Analysis of secondary data showed fluctuations in ROA across the years despite consistent use of the capital budgeting techniques

therefore implying there are a lot of other internal and external factors as stated by contingency theory that affect the profitability of a firm. There is therefore an opportunity for further study on contingent factors affecting firm profitability.

The outcomes also showed that most of the organisations did not employ have specific staff to manage capital budgeting analysis and the capital budgeting decisions were made at management and board level. Majority of finance staff contacted did not have thorough knowledge on capital budgeting techniques and had to refer to senior managers to get feedback on the questionnaire, therefore firms must take capital budgeting with more prominence as they do other finance functions and provide capacity building to their employees. From the ROA analysis, we have seen constant fluctuations of the Manufacturing and Allied firms' profitability throughout the years and the trend has either been constant or declining a fact that is backed by Kenya Business Guide Report 2018 by Kenya Association of Manufacturers. There is therefore need for the government to make policies that protect manufacturing and Allied firm's businesses and to provide a favourable business climate for these organisations to operate in competitively.

The biggest challenge in collection of primary data was access to expert staff in capital budgeting as most organisations were lacking in this area. Given the fact that majority of the organisations did not assign full time staff to capital budgeting, it is no surprise that most of the staff in finance department could not provide feedback on the capital budgeting methods employed by the organisation. There is a risk of inconsistent feedback obtained from primary sources who may be influenced by circumstances such as busyness and fatigue therefore giving hurried or inattentive responses that may be incorrect. There is also a risk that the respondent may not thoroughly understand the organisations capital budgeting policies therefore giving nonfactual responses. Also, a structured questionnaire as a means of collecting primary data may not give certain intricacies on the subject that can be obtained through interviews or observation. The population consisting of the 7 manufacturing and Allied firms was a small sample size and a larger population would have provided a better set of data for statistical analysis.

The study objective was to establish the capital budgeting techniques and profitability of manufacturing and allied firms listed at the Nairobi Securities Exchange. A similar study can be conducted on other Manufacturing firms which are not listed to confirm if similar findings would be obtained or if there are special factors that affect the capital budgeting processes in these firms. Similarly, because of the

fluctuations of profitability levels as obtained from the secondary data, there is a great opportunity to explore the challenges that Manufacturing and Allied firms face in their mission to stay profitable and a float.

References

Ahmed, I. (2013). Factors Determining the Selection of Capital Budgeting Techniques. *Journal of Finance and Investment Analysis, 2*, 1-5.

Akhtar, I. (2016, February 1). *Research Design*. Retrieved from https://ssrn.com/abstract=2862445

Arnold, G.C. and Hatzopoulos, P.D. (2000), "The theory-practice gap in capital budgeting: evidence from the United Kingdom", *Journal of Business Finance and Accounting*, Vol. 10 No. 5, pp. 603-26.

Axelsson, H. Jakovicka, J. & Kheddache, M. (2002). Capital Budgeting Sophistication and Performance-A Puzzling Relationship; *Unpublished Doctoral Thesis*, Graduate Business School, Goteborg University

Bain, J. (1951). Relation of profit rate to industry concentration: American manufacturing, 1936-1940. *Quarterly Journal of Economics*, 65(3), 293–324

Bennouna, K., Meredith, G. G., & Merchant, T. (2010). Improved capital budgeting decision making evidence from Canada. *Management Decision*, 48(2), 225-247.

Berk J, DeMarzo P and Harford J (2013), *Fundamentals of Corporate Finance*, Second Edition

Bhayani, S. J. (2010). Determinant of profitability in Indian cement industry: An economic analysis. *South Asian Journal of Management*, 17, 6–20

Borad, S. (2019). Importance of Capital Budgeting. Retrieved from https://efinancemanagement.com/investment-decisions/importance-of-capital-budgeting

Brigham E.F., & Ehrhardt M.C. (2002). Financial Management: Theory and Practice, *South-Western. Mason.*

Coad, A., Segarra, A., & Teruel, M. (2013). Like milk or wine: Does firm performance improve with age? *Structural Change and Economic Dynamics*, 24, 173–189

Chance, D. & Peterson., P. (2002). Real Options and Investment Valuation, Charlottesville, VA, *Research Foundation of AIMR*

Copeland, T. and Tufano, P. (2004). A Real-World Way to Manage Real Options. *Harvard Business Review*. Published. Retrieved from https://hbr.org/2004/03/a-real-world-way-to-manage-real-options

Domowitz, I., Hubbard, G. R., & Petersen, B. C. (1986a). Business cycles and the relationship between concentration and price-cost margins. *Rand Journal of Economics*, 17(1), 1. 17

Drury, C. and Tayles, M. (1997), "The misapplication of capital investment techniques", *Management Decision*, Vol. 35 No. 2, pp. 86-93.

Eljelly, A. M. (2004). Liquidity – profitability trade-off: An empirical investigation in an emerging market. *International Journal of Commerce and Management*, 14, 48 –61

Emery, G.W (1998), *Corporate Finance: Principles and Practice* Pg 364-366

Fama, E. F., and Kenneth R.F. 2004. "The Capital Asset Pricing Model: Theory and Evidence." *Journal of Economic Perspectives*, 18 (3): 25-46.

Farah, A.M.A and Altinkaya Z. (2018). "Capital Budgeting Decisions and Profitability in Manufacturing Firms. IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 20, Issue 1. Ver. III (January. 2018), PP 27-37

Farragher, E.J., Kleiman, R.T. and Sahu, A.P. (1999), "Current capital investment practices", *The Engineering Economist*, Vol. 44 No. 2, pp. 137-50

Gaur, J. (2011). Financial Performance Measures of Business Group Companies: A Study of Indian Non-Metallic Mineral Products Industries. *The IUP Journal of Business Strategy*, 7, 45–53.

Graham, J. and Harvey, C. (2001), "The theory and practice of corporate finance: evidence from the field", *Journal of Financial Economics*, Vol. 60 Nos 2/3, pp. 187-243

Grazzi, M., Jacoby, N., & Treibich, T. (2016). Dynamics of investment and firm performance: comparative evidence from manufacturing industries. *Empirical Economics*, 51(1), 125–179.

Irungu E.N. (2014) "The relationship between Capital Budgeting Techniques and Financial Performance of Companies Listed in Nairobi Securities Exchange

James, M. (2020, July 28). Profitability Ratios. Retrieved from https://www.investopedia.com/terms/p/profitabilityratios.asp

Jog, M.J. and Srivastava, A.K. (1995), "Capital budgeting practices in corporate Canada", *Financial Practice and Education*, Vol. 5 No. 2, pp. 37-43.

Kinyua, M.K (2018) the Effect of Capital Budgeting Decisions on Manufacturing Firms Listed at the NSE.

Klammer, T. (1973). The Association of Capital Budgeting Techniques with Firm Performance. *The Accounting Review*, 48(2), 353-364.

Krychowski, C., & Quélin, B. (2010). Real Options and Strategic Investment Decisions: Can They Be of Use to Scholars? *Academy of Management Perspectives, 24*(2), 65-78.

Lee, J. (2009). Does size matter in firm performance? Evidence from US public firms. International *Journal of the Economics of Business*, 16(2), 189–203

Markowitz, H.M. (March 1952). Portfolio Selection. *The Journal of Finance*. 7(1): 77–91

Mason, E. S. (1949). The current state of the monopoly problem in the United States. *Harvard Law Review*, 62(8), 1265–1285

Mathura, S.S., & Kenyon, A. (1997). Our Strategy is what we sell. *Long Range Planning*, 30(3), 455-458.

Munyao, A. (2010). The Relationship between Capital Budgeting Techniques and Financial Performance of Companies listed at the NSE.

Murphy B.C. (2020, October 14). Accounting Rate of Return. Retrieved from https://www.investopedia.com/terms/a/arr.asp

Myers, S. (1984). Finance Theory and Financial Strategy. *Interfaces*, 14(1), 126-137.

Namahoro, P., Githui, D. T., & Methane, F. D. P. (2019). Capital Budgeting Techniques and Financial Performance Of Manufacturing Companies Listed on Nairobi Securities Exchange (NSE). African Journal of Emerging Issues, 1(8), 80-98. Retrieved from https://ajoeijournals.org/sys/index.php/ajoei/article/view/52

Nimalathasan, B (2009). Profitability of listed pharmaceutical companies in Bangladesh: An inter and intra comparison of AMBEE and IBN SINA Companies Ltd, Economic and Administrative series, 3:139-148.

Oliva, R., J.D. Sterman. (2001). Cutting corners and working overtime: quality erosion in the service industry. *Management Science* 47(7) 894-914.

Payne, J.D., Heath, W.C., and Gale, L.R. (1999), "Comparative financial practice in the US and Canada: capital budgeting and risk assessment", *Financial Practice and Education*, Vol. 9 No. 10, pp. 16-24

Perry, P. (1992). Do banks gain or lose from inflation? *Journal of Retail Banking*, 14, 25 –30.

Peterson, P.P. and Fabozzi, F.J. (2002), *Capital Budgeting: Theory and Practice*, Wiley & Sons, New York, NY.

Pervan, M., Pervan, I., & Curak, M. (2016). Business Success Enhance with Firm's Age? Case of Croatian Food Manufacturing Industry. *Proceedings of the 26th International Business Information Management Association Conference, Amsterdam, Milano*: 826-838.

Pike, R. (1986). The Design of Capital Budgeting Processes and the Corporate Context. *Managerial and Decision Economics*, 7(3), 187-195

Prince, Y. M., & Thurik, A. R. (1992). Price-cost margins in Dutch manufacturing: Effects of concentration, business cycle and international trade. *De Economist*, 140(3), 310–335

Rosenweig, K. (1981). An exploratory field of study of the relationships between the controllers' department and overall organizational characteristics. *Accounting, Organizations and Society* 339-54.

Rust, T.R., C. Moorman, P.R. Dickson. 2002. Getting return on quality: revenue expansion, cost reduction, or both? *Journal of Marketing* 66(4) 7.

Ryan, P.A., and Ryan, G.P. (2002), "Capital budgeting practices of Fortune 1000: how have things changed?" *Journal of Business and Management*, Vol. 8 No. 4, pp. 355-364.

Sanyal, Rajibkumar. (2019). Liquidity Preference Theory of Interest (Rate Determination) of JM Keynes.

Schlegel D (2015) Cost of Capital in Managerial Finance. An Examination of Practices in the General Real Economy Sector.

Sekaran, U. (2013). *Research Method for Business*, Fourth Edition

Sur, D., & Chakraborty, K. (2011). Evaluating relationship of working capital and profitability: A study of select multinational companies in the Indian pharmaceutical sector. *The IUP Journal of Management Research*, 10, 7 –22

Tulsian, M. (2014) Profitability Analysis (A comparative study of SAIL & TATA Steel). *IOSR Journal of Economics and Finance (IOSR-JEF) e-ISSN: 2321-5933, p-ISSN: 2321-5925.Volume 3, Issue 2. Ver. I (Mar. - Apr. 2014), PP 19-22*

Yator, B. (2018). The Effect of Capital Budgeting Techniques on the Financial Performance of Companies Listed at the Nairobi Securities Exchange.