# Chapter One

# Introduction

## 1.1 Background to the Study

The place of capital budgeting or long term investment in the life of an organization cannot be overemphasized. The costs necessarily involved in capital budgeting is such a huge one that no management should toy with the process of investment. Naturally capital budgeting are those which involve large capital outlays and of course they are for longer period than any other form of investment. These involve bulk capital outlays at the initial stage called year zero while subsequently cash inflows are expected being proceeds of investments. Such investments as are made include: to buy one or more machinery (ies) required for production in a manufacturing concern, to take a decision to buy an existing factory or to build from the scratch, to take up a contract or not to. These are different from the investment in stock and inventories which are short term in nature[1].

Organizations invest largely in capital expenditure to enable them meet the objectives of business or of the stakeholders. To enhance meeting this objective it becomes necessary that management plans its activities of investment from the scratch. This planning process commences from the point of appraisal of the projects to invest in. Due care is required in view of the enormity of the cost. Capital budgeting decisions are often irreversible decisions and hence must be handled with care and caution. Fiduciary duty is on the management unto whom fund has been entrusted, to ensure that the desires and aspiration of the owners and stakeholders are met. This care is the reason why the capital budgeting techniques are in use for the purpose of appraising the available options of investment. Capital budgeting techniques are the methods of appraising capital projects being considered by management for the purpose of generating future cash flows for meeting organizational objectives. The techniques

are various. There are the traditional techniques such as the accounting rate of return and the payback period method. These do not make reference to the time value of money. The other techniques fall under the discounted cash flow methods. Major under this classification are the net present value, the internal rate of return and the profitability index methods. Parameters are often set by management for the purpose of considering whether a project is acceptable under each of these methods or not. This confirms that there are cut off bases or points to compare with what the project offers. Whatever method of appraisal is in use the object of ensuring that business objective is attained cannot be overemphasized. This study attempts to link the capital budgeting techniques to company's ability to meet its financial goals and objectives. Variables for measuring performance include return on investment, return on assets, earnings per share, net profit margin, positive net present value and operational profit or earnings before interest and taxes.

**1.2 Statement of the Problem**

The essence of this study is to discuss capital budgeting techniques in manufacturing companies in Lagos Nigeria in relation to the effects they have on financial performance. The heart of a manufacturing organization is its capital investment. This is used for generating returns for meeting organizational goals. In view of the nature of this sector of the economy (manufacturing) heavy cost outlay is entailed in capital budgeting also called capital investment. Vast amount of money can be wasted, irrecoverably, if investment in this direction is erroneous[1]. A researcher indicated that companies have folded up for taking wrong decisions about capital budgeting[2]. This underscores the need for care by finance executives in taking long term investment decisions. In taking such care, organizations go scientific by making use of specific methods called capital budgeting techniques, for dealing with capital budgeting decisions. Typical methods are the net present value, internal rate of return, payback period and accounting rate of return methods. Decisions in this direction are relatively

irreversible, affects multiple accounting periods, with heavy constraints on organizations financial planning[3]. To ensure that an organization's scarce resources is put to most profitable use, accurate estimation of the uncertain future's returns from the investment is inevitable. It's important that there be neither underinvestment nor overinvestment, both of which have dire consequences[4]. Researcher has a burden to study this topic in view of the above challenges on manufacturing executives, emphasizing on determining the relationship between the various methods of appraisal used by finance executives and the financial performance which the organizations seek after. This study is also needful in view of the differences in conclusions reached by past researchers in this topic of study. Researcher is determined to contribute to existing findings.

A Kenyan study revealed that net present value has a positive relationship with financial performance while accounting rate of return has an inverse relationship with financial performance[5]. Only two methods of evaluating capital budgeting were however made use of in the study. A study in Sierra Leone revealed that payback period technique and three others have significant correlation with commercial banks performance[6]. Same study revealed a positive correlation for ARR while A Kenyan study revealed a negative relationship with financial performance[4]. A further study is considered by the researcher in the manufacturing industry in Nigeria. Of four key methods a study indicated positive relationship between IRR and financial performance[7]. Some others concluded to the contrary.

Bearing the above in mind the researcher has chosen to investigate further to what extent these methods (NPV, IRR, PBP, ARR) used by finance executives to appraise capital investments contribute to financial performance of manufacturing firms.

The findings, recommendations and conclusions of this study should be a reference point for future researchers on this topic.

## 1.3 Aim and Objectives of the Study

The aim of this study is to determine the effect of capital budgeting techniques (NPV, ARR, PBP, IRR) on the financial performance (ROI, NPM) of selected manufacturing companies in Lagos Nigeria.

The specific objectives of this study are to:

i) evaluate the effectiveness of net present value (NPV) technique on financial performance(ROI / NPM);
ii) determine the effectiveness of the accounting rate of return (ARR) technique on financial performance (ROI / NPM);
iii) evaluate the effectiveness of the payback period (PBP) technique on financial performance (ROI / NPM);
iv) determine the effectiveness of the internal rate of return (IRR) method of capital budgeting on financial performance(ROI / NPM) of selected manufacturing companies.

## 1.4 Research Questions

a) What is the effect of net present value technique of capital budgeting on financial performance?
b) What is the effect of accounting rate of return technique of capital budgeting on financial performance?
c) What is the effect of payback technique of capital budgeting on financial performance?
d) What is the effect of internal rate of return technique of capital budgeting on financial performance of manufacturing organizations in Nigeria?

## 1.5 Significance of the Study

Following the research problem statement stated the researcher has chosen to investigate further the effect of capital budgeting techniques on the financial performance of selected manufacturing firms in Lagos Nigeria. The findings, recommendations and conclusions of this study should be of immense significance in the following directions:

- The result of this study should provide the Lead City University, Ibadan, Nigeria with added information to enhance their data base on the subject of this study. It is to provide added information on the effect of capital budgeting techniques on financial performance of manufacturing companies in Nigeria.
- It will further provide a basis for comparison with future studies inthe University on this topic, by future researchers. The extent to which organizations are growing in capital budgeting decision practices over time can thereby be established.
- This study is to be a reference document for academic use in the school of management and social sciences in Lead City University, Ibadan, Nigeria.
- The result of this study will provide both a teaching aid and learning aid for instructors and students respectively in this core area of corporate finance.
- It will help students' academic performance in this area of study.
- The study will contribute to existing knowledge in capital budgeting decisions with special emphasis on the effects of capital budgeting techniques on financial performance of manufacturing companies in Nigeria.
- This study will further enable a comparison with similar studies in other industries such as engineering, schools and colleges, services.
- This study is to be a reference point of further studies for future researchers.

## 1.6 Scope of the Study

This study is being carried out on the topic 'capital budgeting techniques and financial performance of manufacturing companies in Lagos Nigeria'. The key objective of the study is to determine the effect of capital budgeting techniques on the financial performance of selected manufacturing companies in Lagos Nigeria. The effectiveness of each of the capital budgeting techniques on financial performance of selected manufacturing companies shall be determined. The specific capital budgeting techniques that researcher used for the purpose of this study are four primary techniques viz: net present value, internal rate of return, payback period and the accounting rate of return methods. These put together are the independent variables for the purpose of this study. Financial performance was measured by reference to two key performance indicators: the return on investment and the net present margin methods. These are the dependent variables. Selection of Lagos for this study is in view of the fact that it is a major industrial nerve centre of Nigeria. Three notable and vibrant companies listed in the Nigeria Stock Exchange and which have their head offices and key operational areas in Lagos Nigeria were purposively chosen for this study. As secondary data source the published financial statements of these companies over a period of ten years, 2011 – 2020, were assessed. The fairly long period covered was to enable reasonable conclusions to be made with respect to the purpose of this study. The source of data, the period covered as well as the companies involved confirm due reliability and viability of research instrument –secondary data. The financial statements reflect the position and view of the selected firms on this study. Companies used for the study are those in the cement, salt, sugar, steel, oil & gas, packaging, flour milling as well as food production. Published financial statements were availed professionals such as finance managers, management accountants for the purpose of eliciting more information as to assist the data analysis process. These are reasonably versed and experienced in capital budgeting and financial decisions in the selected manufacturing companies. This enhanced the

reliability of the responses obtained from them, more so that the financial statementis the researcher's main research instrument. The scope has placed a limitation / constraint on junior level officers who don't have access to decision making process of the organizations. This, however, did not have adverse effects on this study in view of the level of reliance intended to be placed on responses obtained from the respondents. Also provision is made for qualitative responses which assisted the researcher in his data analysis, findings and conclusions on this study. On few occasions direct interviewing was used to enable the researcher elicit responses from some finance experts who are versed enough to give independent and firm positions on the subject of this study. It was quite expository and revealing. This was adopted to add further qualitative effect to the study.

**1.7 Limitation of the Study**

As regards the costs used for evaluating capital projects, various types of cost come to mind. These include the weighted average cost of capital (WACC), the cost of debt capital as well as cost of equity. Different researchers have rated these costs differently according to organization's preference for them. This may not pose significant effect on results of studies because costs often used by organizations are a function of the mode of financing of projects. It has no effect on this study because it is not the real essence of this study to do elaborate calculations on project appraisal.

Researchers have used different methodologies in the study of capital budgeting decisions generally, and capital budgeting techniques and financial performance specifically. It is supposed that the choice and use of specific methodologies might have effects on the results of the study of CBTs and financial performance. The extent to which this may occur has not been clarified in any study on this topic. This is however not expected to be sensitive enough to invalidate the results of this and existing studies. There has always been adoption of different methodologies in different researches.

## 1.8 Operational Definition of Terms

Accounting Rate of Return: This is the percentage which average annual profit bears to average annual capital employed or average annual investment cost.

Asset Turnover Rate: This is the proportion which turnover bears to total assets. It is a measure of the efficiency with which assets generate revenue.

Capital Budgeting: This is a process and it involves initiating, planning, implementing and harnessing capital investments for the purpose of generating future income. Ultimately it is to ensure that organizational objective is achieved.

Capital Budgeting decisions: Decisions about investment in capital items which necessarily form the basis of continuing existence of an organization, to engender future benefits.

Capital Budgeting Techniques: Methods used for the purpose of determining the viability or otherwise of a project.

Discount Factor: A mathematical factor which is applied on cash flows to reduce future value of cash flows to its value in present day terms. Time value of money is by this process recognized in the capital budgeting process.

Financial Performance: This is the extent to which an organization's activities have caused the organization to meet it's financial objectives. It is how well an organization puts its assets into use for generating revenue.

Financial Performance Measurement: This is also called financial performance indicators. By this, financial performance of an organization is measured.

Fundamentally Profitable Project: Projects which are considered profitable by applying the fundamental factors of profit making such as pricing, quantity sold, share of market and overheads.

Internal Rate of Return: This is the cost level at which the present value of inflows equals the present value of initial capital outflow of a project. It is, in a way, the break-even point of the project.

Mutually Exclusive Projects: Projects whereby the choice of one precludes the choice of the other. Investing in project 'A' implies that project 'B' cannot be invested in simultaneously.

Net Present Value: This is the difference between the present value of future cash inflows and the present value of the initial capital outlay.

Present Value: This is the product of the cash flows and the discount factor. It is today's value of series of future cash flows.

Profitability Index: This is the proportion which the net present value of cash flows bears to the initial capital outlay. It is a measure of the extent to which the net present value covers the initial capital outlay.

Relevant Costs: Costs which are applicable in a decision process.

## Endnotes

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# Chapter Two

# Literature Review

## 2.1 Conceptual Review

### 2.1.1 Capital Budgeting Decisions

Capital budgeting decision is also referred to as capital investment decision. It is a decision making process involving putting up a capital budget, analyzing investment opportunities, assessing the viability or otherwise of such investment opportunities / projects, taking decisions to or not to invest in the project(s), implementation and of course monitoring the performance of the projects. Reference to investment here is to capital investment. Capital budgeting is both a planning and control exercise as it is not enough to do all activities leading to investment alone without monitoring performance. Monitoring of the project performance leads to comparing the actual performance with the cash inflows estimated at the point of project evaluation. Thereby variances are analysed and decisions taken thereon. Capital budgeting is fundamental to the success of manufacturing firms as production cannot take place without capital assets being acquired. Working capital investment is vain without an appropriate measure of capital investment. Capital budgeting involves investing today with a view to recouping in form of proceeds / cash inflows over a future period of time.

Capital budgeting is an accounting principle financial decision makers in an organization make use of in order to determine which projects they should pursue[1]. It is vital that capital budgeting must be understood; it is apt too that the techniques and different methods of evaluating capital budgeting investment opportunities be well understood. This helps in understanding the decision making process of companies and investors[2].

Capital may be defined functionally as operating assets used for production and as such for income generation; budget is a detailed estimation of income and expenditure for a period of time. The expenditure budget is made up of both the capital budget and the recurrent budget. Budgeting is the process involved in putting up a budget. In other words it is the whole process involved in preparing, implementing and putting a budget into operation. Capital budgeting evolves from bringing these two key concepts together. Thus capital budgeting is the process of analyzing projects and deciding which ones to include in capital budget. Capital budgeting decisions evaluate projects that are being considered for investment purpose, makes a forecast of the return expected from the projects with a view to determining whether returns from the project are adequate. Capital Budgeting decisions evaluate expenditure decisions which involve current outflow of funds. These investments are expected to produce cash flows / benefits over a fairly long future period[3].

Capital budgeting which looks majorly at the following areas of decision making: replacement of long-term assets, investment appraisal techniques, purchase of long-term assets, subcontracting expenditure and working capital decisions, has a significant relationship with profitability of the organizations[4].

There is significant and positive correlation between five dimensions of capital budgeting decisions and profitability of an organization. There exists positive relationship between the independent variables of capital budgeting decisions and profitability. In reviewing capital budgeting in manufacturing companies a strong relationship is confirmed to exist between capital budgetingdecisions and profitability. Studies confirmed that the capital budgeting techniques have significant relationships with the financial performance of organizations[5].A recent study states that a good capital budgeting technique will have significant effect on the defined measure of performance of an organization[6].

There are studies which agree to the fact that one or two of the capital budgeting techniques have significant effect on performance of the organization studied while the others do not have effects on the financial performance of the companies. For example a study declared that a relationship existed between the payback period and financial performance and, as well as between the net present value, accounting rate of return and financial performance, but no such relationship existed between the internal rate of return method and financial performance[7].

### 2.1.2 Why Capital Budgeting Is Crucial

The enormity of costs associated with long-term assets and the length of exposure to risk of such investments makes it essential to properly evaluate capital budgeting decisions before embarking on them. The estimation of cash flows of uncertain future period itself is problematic[8].

Capital budgeting decisions are crucial to organizational success for several reasons. Firstly, capital expenditures typically require large outlays of funds. These are costs that are mostly irreversible when they are incurred. There is no gain saying that a lot of negotiations and contracting agreements are done before the investment is concluded. Secondly, firms must ascertain the best way to raise and repay these funds. The totality of financial management has to do with raising funds and maximizing the use of fund profitably enough to meet organizational objectives. Thirdly, most capital budgeting decisions require a long-term commitment. Due care is required to be exercised before the cost involved is incurred. The inflows expected from the investment over the lifespan of the project must be carefully, skillfully and professionally analysed. Finally, the timing of capital budgeting decisions is important. When large amounts of funds are raised, firms must pay close attention to the financial markets because the cost of capital is directly related to the current interest rate or investor's expected rate of return[9].

The extent of risk associated with capital budgeting is high in view of the fact that investment is made in the present for a return that is expected over a distant / future period. There is uncertainty and risk surrounding the events and activities of a future time. Inflows cannot be ascertained with utmost certainty. The sensitivity analysis of capital budgeting depends on a number of uncertain independent variables which may have impacted on the investment results. The positive value of the investment appraisal is value added to the firm, and it can be enhanced return for the shareholders[10].

### 2.1.3 Projects requiring Capital Budgeting Decisions

These are the projects in an organization that are worthy being classified as capital investments which an organization invests in for the purpose of generating future income. They are the areas of cost other than recurrent expenditure whereby an organization must of necessity take due care before committing funds. This is in view of quantum of money involved. Future profits and cash inflows are expected from committing funds into such projects. Two issues being considered here are the characteristics of capital budgeting activities and capital budgeting activities in manufacturing concerns.

### 2.1.4 Characteristics of Capital Budgeting Projects

Characteristics of the projects referred to as capital budgeting activities / projects include the following:

i. They contribute to the income generation of the organization incurring the cost of that process. The income is future benefits expected as a result of incurring the capital cost involved. These benefits are over the future expected life span of the project involved.

ii. In view of the futuristic and long term nature of the expected benefits, projections, estimations and forecasting of future cash inflows and profit are required to be made, in the process of

evaluating the investment opportunity. This is done for the expected life span of the attributable project.

iii. Large amount of cost is involved which is a major reason why due care and caution is required before committing funds. Capital budgeting involves decisions of high value which makes it a crucial function for management of an organization. It is an important role in the strategic decision of an organization[11]. Capital budgeting decision is such a decision that can affect organization's liquidity negatively if care is not taken. A synergy is therefore of necessity between a capital budgeting and working capital management.

iv. Once capital budgeting decision is taken it cannot be withdrawn neither can it be reversed without sustaining a loss. The cost of terminating the project and of pursuing further must be evaluated to enable a course of action to be taken.

v. As the cost is high so high also is the risk attached to capital budgeting decisions. A large financial burden is involved in this aspect of organizational and financial management. The fact that returns which cannot be determined with exactness are expected over a future period spells risk.

vi. The capital budgeting process, in view of the cost involved, involves a financing decision. Determining the source of funding the decision is a key decision. The organization needs to take a decision whether to resort to debt financing or internal source such as equity financing. They are decisions that also affect the organization's dividend policy. It is a decision that may affect shareholder's returns in the short run but which complimentarily brings a positive long term benefits.

vii. As an offshoot of the above it is noticeable that capital budgeting decisions have effects on the cost structure and of course the capital structure of a company.

viii. There is no doubt that the capital budgeting exercise is a difficult one. It is also a strategic activity. Decision on the most appropriate opportunity to invest in is a vital and difficult one, hence the reason why organizations make use of capital budgeting techniques in order to determine the appropriate activities, ventures and projects to invest in.

ix. Future inflows expected from the capital budgeting activity may be shrouded in risks and uncertainties thus requiring organizations to take the more than usual steps in the process of evaluating the capital budgeting activities.

x. Irrespective of the risk involved capital budgeting leads to an enhancement of the business of an organization. Growth potential and opportunity of an organization that invests in capital budgeting activity is higher than of a company with little or no such investment. Capital budgeting investment / activity leads to high productivity, improved market share, and of course profitability. It may cause high level of transformation of a company's outlook and processes especially in these days of massive technological growth and opportunities.

xi. Depending on the nature of investment, assets acquired in the process may appreciate or depreciate in value. Usually organizations should make appropriate provisions for replacement of some capital assets especially where diminutions are inevitable.

xii. Current funds are incurred for expected future benefits. Where no future benefits are derivable such venture is not capable of being classified as a capital budgeting activity. Of course no management will engage in such a venture.

xiii. The future of the company is based on the expenditure resulting from the capital budgeting decision. If the investment is worth the while organizational competitiveness will be enhanced but if otherwise failure is inevitable.

### 2.1.5 Capital Budgeting Activities in Manufacturing Concern

Following the above we hereby consider the following key activities in a manufacturing concern that constitute capital budgeting deals / projects:

i. New product line decision. A manufacturing company running on or two production lines may take a decision to introduce a new product or brand to the market for the purpose of enhancing its financial performance and enhancing the value of the organization. Introduction of one or more new products will necessarily call for new production lines.

ii. New branches and plants: This is an expansionist programme whereby a manufacturing concern intends to enlarge its base beyond the local captive area. Issues that may give rise to this include the need to be swift in meeting customers' needs in an area where they have a large market, availability of raw materials in such areas, cheap labour and cost considerations which will enable higher returns.

iii. Replacement of capital machines: The need to replace machines cannot be overemphasized when such machines are old and performing sub-optimally, when such machines are outdated or when the cost of maintenance is unreasonably high.

iv. Acquisition and mergers: As part of a company's growing and expansionist process it may engage in either an acquisition of another company or a merger with another. Acquisition takes place where a company, usually with a greater advantage, takes over another company called the acquired company. That other company ceases to exist while the identity of the acquirer company remains after the acquisition. Both companies may and may not be in the same kind of business, depending on management's focus / direction. Mergers take place where two or more companies of reasonably comparable strength come together to become a single entity operating under a new name and one management. Their businesses, as in the case of

acquisitions may be related or totally unrelated. They may be done in order to extend the marketing scope of the companies in the merger especially where each of the companies have strong holds in specific geographical areas.

v. Taking technology advantage: Technology is fastly taking over the global business and organizations' operations that an organization that is laid-back may become irrelevant in no time at all. Manner and mode of doing things, including production mechanics, are changing fast. For companies in the manufacturing sector to remain competitive like companies in the service business they must take advantage of technology by investing in modern machines for production.

vi. Facility expansion: This is majorly the expansion of the capacity of the existing facility. This is to engender more production efficiency and effectiveness. This is not same as repair, maintenance or machine improvement. A significant increase in the electric power generating capacity of the production machines is more like what is being discussed here.

vii. Lease or buying of plants and equipments: A company may need to take a decision along these lines: to but outright or to take a lease over the capital item being considered for investment.

All the above are projects requiring a process of evaluation before they are embarked upon.

### 2.1.6 Capital Budgeting Process

Though there is no hard and fast rule about the steps to following a capital budgeting process there are some basic processes which are common, virtually in all capital investment processes. There is no gainsaying that the stages are also determinable by the nature and type of the capital investment opportunity. Basic processes include:

i. **Identification of Capital Project.** This is the process of determining whether an investment opportunity exists which management should consider or which should be brought to the notice of management as the case may be. The nature of the investment opportunity and / or the circumstances calling for it determines who originates it. It may arise from individual managers, head of departments, strategic policy unit, executive management or the owners. The economic focus of government may also affect companies in their capital budgeting decisions. Production manager, may initiate the need for new machines and additional product line while the sales manager (based on feedbacks from the market) may initiate the need for a new plant or new lines of product.

ii. **Initial Screening.** This may involve a review of whether the project within the corporate strategy of the organization. This is a primary test whereby questions are asked and instant decisions taken. Consideration is also given to whether the investment opportunity fall within the object clause of the company. If not no further consideration is given.

iii. **Project Evaluation Involving Cash Flow and Profit Forecasts.** Most companies have capital budgeting committees who are responsible for this sensitive aspect of capital investment. They are usually knowledgeable in finance matters and in the workings of the business of the organization. They operate by the investment policy of the organization, make profit and cash flow estimation to facilitate an evaluation of the viability or otherwise of the investment opportunity being considered. The committee works with assumptions which underlie the estimations. Using techniques that are according to policy and acceptable to management for the project evaluation process is a key function of the committee. Where an organization does not insist on specific technique of evaluation the committee makes use of one considered appropriate in the circumstances. This process also entails comparing total

inflows / income with the investment outlay to determine net cash inflows and net profit. The finance manager may be required to provide details as the cost of capital and discounting factors (where appropriate) to use for the evaluation process. Recommendation to executive management is the concluding part of this stage. This may take the form of:

- Accept a project or a number of projects
- Reject a project
- Which combination of projects to invest in.

iv. **Management's Consideration and Approval.** Executive management subjects the recommendations of the committee to further review. Possible outcomes of the review are:

- Approval of the recommendations.
- Utter rejection of the recommendations
- A return of the whole work for a reappraisal.

The decision taken by management may be informed by level of satisfaction with the work, fundamental errors in the workings, fresh information at their disposal, changes in the circumstances of the project and consideration of economic perspectives.

v. **Project Implementation.** Upon approval of the project fund is released for this major activity to be in full force.

vi. **Project Performance Review.** This is both a monitoring and a control function. The essence of this is to ensure the project runs according to and better than schedule. Organization's objective of meeting the needs of shareholders and stakeholders is being put to test early enough at this stage. The process doesn't have to wait till end of project period. It is to start as early as year one so that variances can be determined and corrective actions taken. This is

the control function. It is necessary to note that actions are required to be taken whether the variances are positive or negative. Decisions taken at this level may include adjustment to assumptions underlying the projections made at the evaluation stage and adjustment to expected cash inflows and profits for the remaining years ahead. Project abandonment may arise in some cases whereby the critical success factors are missing.

### 2.1.7 Capital Budgeting Techniques

The primary approach to an investment project that an organization considers undertaking consists of an analysis through capital budgeting techniques of expected financial value creation. The central goal of the analysis is to estimate the project's impact on the corporate value in the financial market[12]. The techniques of capital budgeting are the various methods adopted by a firm in order to assess and evaluate whether a capital project or venture is worth investing in or not. There are the traditional methods as well as the discount value methods. While the traditional methods do not take into account the time value of money the discounting methods bears in mind the time value of money. Time value of money recognizes the fact that one Naira today is not the same as one Naira in the next two years. The value of the one Naira received in two years time is in today's prices less than one Naira. This is in view of the effluxion of time, inflation rate as well as interest rates which are catered for in the formula used under the discounting methods. Methods of appraisal may not give same or similar results if they do not operate on similar principles. For example a method that is based wholly on accounting data and not cash flows may show a positive result whereas non-cash items have been loaded into the figures. Also such methods assume that one Naira today is same as one Naira in the next two years. The use of appropriate capital budgeting techniques helps the firm to rank investments according to their efficiencies and optimality of returns for selection[13].A recent research in India which

investigated the level of sophistication of capital budgeting practices in India, confirmed that there is growing adoption of sophisticated DCF techniques and risk-adjustment techniques.

As advocated by academic literature, DCF techniques of IRR and NPV are the ones most favoured in practice, though IRR overrides NPV in preference. Survey results indicate that Indian companies are equally divided on the issue of NPV-IRR contradiction, and both the methods are equally preferred. Consideration of time value of money and all the cash inflows of projects emerged as the prime reasons for an extensive usage of DCF techniques. Conversely, the few companies not using these techniques, identified difficulty in use, non-suitability to their business and non supportive top management as the reasons for the same. There is a growing inclination by the Indian corporate sector to use multiple capital budgeting techniques in evaluating investments, wherein NDCF techniques are used as a supplement to DCF techniques. The usage of traditional payback period method is very common. The high popularity of this method is attributed to its increased emphasis on liquidity, risk and simplicity. It is striking to note that all the other investment appraisal methods are scantily or less frequently used. There is sluggish adoption of even the newer techniques advocated by academic theory viz a viz NPV with Real Options and the like[14].

### 2.1.8 Classification of Capital Budgeting Techniques

The techniques often used can be broadly classified as the traditional and the discounted cash flow (DCF) methods. The traditional methods are also called the non discounted cash flow techniques.

#### 2.1.8.1 Traditional Methods or non discounted cash flow techniques include:

- The accounting rate of return (ARR)
- The Payback Period

The Discounting Methods:

- The net present value technique
- Internal rate of return
- The Profitability index technique

Investment appraisal is the evaluation of investments with regard to their profitability and/or cost effectiveness. The overall objective is to identify the attractiveness of the investment from the point of view of the investor. The methods used are the Net Present Value (NPV), Internal Rate of Return (IRR) and Annuity method. For small scale investments, the payback method and the return on investment method (ROI) are also applied[15].

**2.1.8.1.1Accounting Rate of Return (ARR)**

This is a method of appraising capital budgeting investments which makes use of accounting profits for determination of project viability or otherwise. The ARR is the ratio which the estimated total profits bear to the estimated total investment and it is expressed in percentages. It is base on the accounting ratio of return on capital employed called ROCE. The ratio aside from the way it is defined herein may be calculated in any of the following ways:

- Estimated average profit / estimated average investment * 100
- Estimated total profit / estimated average investment * 100
- Estimated average profit / estimated initial investment * 100

From the above it will be noticed that there are different definitions of the ARR. Accountants have not been definitive as regards which one to use. They are all acceptable. The rule should be consistency. There are however general preferences for the definition which expresses average profit as a

proportion of average investment as well as the definition which expresses total profit as a proportion of total investment as revealed in the definition. Where a single project is involved such project will be acceptable if it meets the minimum ARR criteria set by management. Where two or more projects are involved and only one is to be considered on ground of mutual exclusivity the one with the higher / highest ARR and which also complies with the firm's standard is chosen. It must me noted that accounting profit and not real cash flow is used in the calculations. The accounting rate of return uses accounting information provided by the financial statement, to determine the economic worth or viability of an investment. The accounting profit is the net cash flow minus depreciation and tax. In spite of the shortcomings often associated with the accounting rate of return technique of appraising investments it is noted to be a simple to calculate and also simple to understand. In view of the simplicity of understanding and comprehension it is less time taking. A key point in favour of the accounting rate of return above the payback period technique is the fact that it makes use of all the profit in the entire life of the project i.e. no profit is excluded. Limitations often attached to the accounting rate of return as a technique includes the following:

i. ARR has definitional issues. To analysts may be evaluating a project using the same sets of data under ARR and both of them will come with different results and possibly different recommendations.
ii. ARR uses accounting profits and not cash flows.
iii. It ignores the time value of money.
iv. It does not consider the fact that profit could be reinvested.
v. It does not make provision for investments which take some years before any profit is made.
vi. It does not consider risk involved in projects

### 2.1.8.1.2 The Payback Period Technique

This is another traditional approach to evaluating capital budget investments. Major difference between this technique and the accounting rate of return are that payback period makes use of cash flows as against ARR using accounting profit and the fact that payback period does not use all the cash flows in the life of the project. Any inflow after the payback period, irrespective of how significant it will be to the fortune of the firm, is ignored. This is a major gap in the use of this method. This method is popular with firms in the sense that it considers how quickly the investment outlay would be recovered. This technique is desirable in a situation whereby the future is shrouded in uncertainties. Payback period may be calculated in two ways:

i. Where the annual cash inflow is equal. Payback period will be arrived at by expressing the initial outlay as a proportion of the constant annual cash inflow. This can be calculated thus:

Payback period = Initial outlay / Investment

Regular cash inflow

PBP = P / C

Where:

P = Initial outlay

And

C = Yearly cash inflow

ii. Where the cash flows are not equal. In this case the inflows will be added up until the initial outlay is arrived at. There may be need to fractionalize in the last year so as to arrive at the exact number of years and months.

In a case of an initial investment of N300,000.00 where the following inflows are expected:

| Year | Cash inflow | Cumulative |
|---|---|---|
| 1 | 40,000 | 40,000 |
| 2 | 120,000 | 160,000 |
| 3 | 140,000 | 300,000 |
| 4 | 480,000 | 780,000 |
| 5 | 720,000 | 1,500,000 |

The payback period is three (3) years when the N300,000.00 is recovered. The above reveals a defect of the payback period in relation to other methods in that the significant inflows after year three are no considered and are deemed to be irrelevant. If the inflow in year 3 was N100,000 the cumulative inflow at the end of year 3 would have been N260,000 remaining N40,000 to be recovered from the N500,000 inflow of year 4. The payback period will then be 3 years and 40,000 / 480,000 *12

=3 years and 1 month or 3 1/12 years.

**The Decision Rule**

This varies with the nature of project being appraised. Where a single project is being considered the project will be accepted if the payback period falls within the payback period limit set my management. For multiple projects which are mutually exclusive the one with the least payback period is to be accepted / chosen.

The payback period method poses no calculation difficulties i.e. it is easy to calculate and as well easy to understand. Ease of calculation and understandability of the method may be a key reason why some organizational executives may favour the use of the payback period method. Cash flow, rather than accounting profit is used in the calculation of the payback period. Between the two key methods which fall under non discounted cash flows i.e. accounting rate of return and payback period, this is the only technique that uses cash flow. This method is in itself a method of managing risk in investment management especially when future cash flows are highly unpredictable.

The limitations attributable to the payback period technique if appraising capital projects include:

i. It ignores any cash flow after the payback period irrespective of how significant such inflows could be to organizational performance. The above example drives this point home succinctly.
ii. It ignores the magnitude and timing of cash flows. One Naira received at the end of years 1, 2, 3, and 4 are seen as the same and equal to one Naira received today (the starting date of investment called year 0).
iii. It does not consider the time value of money.
iv. Some projects' cash flows are gradual in the earlier years and heavy in later years. Payback period technique jettisons such to accept a project with earlier year / quick repayments, but without meaningful future inflows.
v. In view of i and iv above the method sounds inconsistent with the objective of maximizing the value of the firm.
vi. In cases where outlays are made over more than one or two years it becomes difficult to decide what initial outlay to use and when inflow calculation commences.

In spite of the fact that it sounds inconsistent with the objective of maximizing the value of the firm the fact that the proceeds of the early recovery of investment value can also be reinvested to generate further inflow is worth of mention.

There is however a variant of the payback period technique which takes care of the limitation that it ignores the time value of money. This variant is the discounted cash flow technique.

**2.1.8.2 The Discounted Cash Flow Techniques**

Common fault of the traditional methods discussed above is the fact that these methods ignore the time value of money. The discounted cash flow techniques are those methods which give prominence to the time value of money through the process of discounting using appropriate cost of capital. Discounted cash flows are used to evaluate projects. The discounted cash flow techniques recognise that cash flow arising at different time periods differ in value and are comparable only when they are expressed in their present day values. The discounting enables the investor to see the future cash flows as if they were received on the day the investment was made. The cost of investment or the initial outlay is therefore comparable to the future cash inflows[16].

We will make reference to three methods viz: the net present value method, the profitability index method and the internal rate of return.

These investment decisions are often taken by top management[17]. Investment decisions are based on predictions of the economy and experiences from the past[18].

#### 2.1.8.2.1 Net Present Value

This method requires the determination of the appropriate cash flows till the end of the project, determination of the relevant cost of capital which be used for the discounting of the future cash flows. It is an attempt to find year zero's equivalent of the future cash flows i.e. treating the future cash flows as if they were received on the day of the investment. The discounted value of the series of future cash flows is called present values. When the present value of the initial outlay is deducted from the present value of the future cash inflows, the result is what is called the net present value. It may be positive, nil or negative. A positive net present value is desirable while a negative net present value signifies loss making tendency for the project. A nil net present value is a break-even point for the project. This calculation is expressed thus:

Net present value = Present value of future cash inflows less initial outlay

NPV = PV of A – PV of I

Where:

A = cash inflows and

I = Initial outlay

Discounting the future cash flows

Before the above calculation can be meaningful the discounting process is explained thus:

i. Determine the initial outlay as well as the estimated future cash inflows.
ii. Determine the cost of capital to be used for the discounting and to appraise the project. The cost of capital to use is determined by factors such as the source of funding the*project*. It may

be funded with equity, from reserved fund or from borrowing. It may also be from a mix of both.

iii. Determine the discounting factor from the cost of capital thus:

Df = $1 / (1 + r)^n$

Where:

r = cost of capital or simply rate

n = year n

This is done for each year

iv. To arrive at the PV for each year's cash inflow multiply each year's cash inflow by the discounting factor for that year as in this formula:

PV = $A * (1 / (1+r)^n)$

= $A / (1+r)^{n\backslash}$

Where:

A = Cash inflow

v. Determine net present value thus:

NPV = $( \xi A / (1 + r)^n ) - I$

Where:

$\xi$ = summation of the PV of the inflows

I = initial outlay

The Decision Rule

Generally, a project is acceptable if the net present value is positive i.e. the present value of the series of annual cash inflows is more that the present value of the initial outlay. In a situation where more than one project are being considered and the two projects are mutually exclusive (doing one precludes the company from doing the other) the one with the higher NPV is acceptable. In a situation of capital rationing whereby the projects are independent projects ranking of the projects is done starting with the one with the highest NPV until the fund available for investment is exhausted.

**2.1.8.2.2 Profitability Index (PI)**

This is a variant of the net present value. It is a relative approach relating the present value of the future cash flows to the present value of the initial outlay by finding the ratio which the earlier bears to the latter i.e.

PI = PV of cash inflows / PV of initial outlay

PI may be 1, greater than 1 or less than 1.

When the PI is 1 that is when the net present value is zero and this is the break-even point as mentioned above. When it is greater than 1 the result is similar to when net present value is positive and strengthens organizational performance. The PI may be less than 1. In such a case the projected will be rejected as accepting it will run contrary to meeting organizational objective of enhancing stake-holders' value.

#### 2.1.8.2.3 Internal Rate of Return

The internal rate of return is a cost of capital which equates the present value of future cash flows from a project with the present value of the capital outlay. It is the break-even cost of capital above which it will be undesirable to accept a capital project.

Many companies tend to see the various capital budgeting techniques as alternative ways of looking at an investment opportunity. They often use various techniques to capture as many facets of a project proposal as possible. There are two major methods used to analyze the viability of an investment which are; the discounted cash flow and the non-discounted method. The internal rate of return falls within the class of the discounted cash flow techniques[19].

With a response rate of 35 percent, it was concluded that the theory–practice gap is low as Pakistani listed firms are using discounted cash flow methods of capital budgeting and preferring net present value over internal rate of return[20].

The enormity of costs associated with long-term assets and the length of exposure to risk of such investments makes it essential to properly evaluate capital budgeting decisions before embarking on them.

The estimation of cash flows of uncertain future period itself is problematic and to add a complex technique of project evaluation that will require trial and error could be frustrating. A recent study came up with a method that bye-passes the trial and error approach to arrive at the IRR; it enables the calculation of IRR when net present value at two cost levels are positive or the two are negative. This is an alternative to the use of interpolations. Investments analysts were advised to properly evaluate projects so that investors will source for funds where the interest rate is lower than the projects' IRR[8].

### 2.1.8 Choice of Technique

Methods of capital budgeting in use differ from organization to organization. Within the same organization the method to use too vary depending on the kind of asset being evaluated. Top management and people who used the assets are the main sources of capital budgeting ideas. Net present value and profitability index are the most frequently used capital budgeting techniques in some countries like Kuwait and the choice of the technique is determined by the nature of the project under assessment as mentioned above and the academic and professional capabilities of corporate staff. Factors such as uncertainty about the outcome of the capital budgeting techniques, non-financial factors such as strategic planning, corporate image, employees' capabilities and environment protection are taken into consideration when making capital budgeting decisions[21]. Borrowing from the capital budgeting practices of the Cambodian manufacturing sector the payback period, NPV, discounted payback period and accounting rate of return are the most popular evaluation techniques. Interest rate risks, as well as business cycle risk, are mainly adjusted with a discount rate, and the commonly used method for calculating the cost of capital is the after-tax cost of debt and the weighted average cost of capital (WACC). Furthermore, the finding suggests that the longer the existence of a company, the more likely for it to use the NPV method. The finding also reveals that the higher the amount of capital investment, the more it is likely to use the NPV method, while the smaller the amount of capital investment, the more likely the payback method will be used. With higher educational background, NPV and ARR are most likely the methods to be used in capital budgeting among firms[22].

### 2.1.10 Considerations for Accepting or Rejecting Capital Projects

It must be clearly stated that in capital budgeting decisions, whether a project makes positive net present values, positive average rate of return and low payback period are not just the only factors executive management takes into consideration to arrive at a final decision.

Issues that need to be considered further include:

i. Availability of funds to execute the project or the number of projects that pass the primary decision rule.
ii. In a case whereby capital is a limiting factor management has to enter into a situation of capital rationing, a situation akin to Adam Smith's economic theory of ranking available needs jostling for the limited resources available. Restriction is placed on the amount of new projects that can be undertaken by a company.
iii. Consideration of whether the projects being considered are independent projects or not (having passed the primary test).

All these have effects on the decision on whether to embark upon a project or not. This is a consideration after the projects must have been subjected to the primary tests and considered primarily viable. The use of the capital budgeting techniques is essentially a primary viability test. The cost outlay involved in capital projects are enormous and hence the details and processes involved should not be jettisoned neither should the processes be seen as merely an academic exercise.

We consider here two classifications of projects for the purpose of arriving at criteria for making a choice and recommendation to executive management. They are the independent projects and the mutually exclusive projects.

### 2.1.10.1 Independent Projects

This presupposes that there are more than one or two projects being considered at a point in time. Independent projects are those which can the undertaken together. Executing one does not preclude executing the other. To this extent, all things being equal, both projects can be undertaken together.

The acceptance criterion is to accept the one or ones that meet(s) the acceptable standard of the organization. Usually organizations have minimum acceptance criteria depending upon the technique of capital budgeting in use. If the accounting rate of return is in use and the minimum rate acceptable for any project is 15%, any project offering 14.5% has failed primarily and cannot be considered. Projects offering 15% or higher qualify provided the fund to execute is not a constraint.

Under the payback period if the acceptable payback period for a project to be undertaken is three years, any project offering a payback period of three years three months fails to be considered.

The same rule goes for the techniques involving the use of discounting factors which be discussed in detail.

From the above it will be noted that there are cut-off rates predetermined by management as part of her capital budgeting decision policies. We emphasize here that the need for consistence in the use of the policies cannot be overemphasized. Committees on capital budgeting are familiar with the policy handbooks and need no tutorials as soon as committee has issues to discuss.

### 2.1.10.2 Mutually Exclusive Projects

Projects on ground could be mutually exclusive in nature. This means the handling of one precludes the handling of the other. This is common in public service tenders whereby specialization is required. There are engineering contracts to bid for, there are building jobs and there are purely electrical

projects. It is often stated that contractors who apply for one cannot apply for the other. A contractor who has capacity for two or more will access the projects before making a bid. The decision criteria here is to go for the project that offers a higher accounting rate or return (ARR), smaller payback period, higher net present value (NPV) or higher IRR as the case may be. It will be noted here that the case is of comparing one project with the other, which is not the case under independent projects.

#### 2.1.10.3 Divisibility of Projects – A Guide Against Idle Funds

There are situations of capital rationing whereby the projects are independent but fund available cannot be sufficient for the prosecution of more than one or two of the projects. Finance makes room for organizations to take maximum advantage for the purpose of ensuring that stakeholders' value is maximized. It makes provision for divisibility of projects. Where projects are divisible a firm can exhaust the available fund on more than one project even when it will mean taking up a fraction of another viable project. In this case one project and a half of the other could be invested in. This helps organizations to guide against idle funds especially when there are opportunities to maximize the use of fund.

### 2.1.11 The Concept of Relevant Costing in Capital Budgeting

In a capital budgeting decision environment the finance manager and the capital budgeting committee chairman must be quick to recognize the costs which are relevant for the purpose of taking a decision. It means that not all figures, not all costs that show up either in the books of the company or in the course of committee deliberations are relevant for decision making. The ability to determine which cost is relevant and which cost is not relevant will ensure that right results are obtained and that right recommendations are made to management who may not be able to go into the details / the components of the presentation from the committee. Loading non-relevant costs will result in rejecting

a project which would have been accepted. Ignoring relevant costs may also mean accepting a project which may be the undoing of the organization. We noted that capital budgeting decisions are very vital to the existence or otherwise of an organization.

Where the discounting methods are in use the following costs should be noted:

i. Committed or sunk costs. These are costs already incurred before the issue of the project came up. They are historical in nature and should as such be seen as non-relevant costs. They are non-relevant as they do not involve cash flow at that time and for that purpose. The taxation theory of costs being necessarily and exclusively incurred to be deductible expenses is similar to the rule of relevant costing. To be relevant the cost must be traceable to the project and purposely for the project.

ii. Interests expenses are non-relevant as they are taken care of in the discounting process having been built into the cost of capital. To include it is to double count.

iii. Depreciation does not involve cash movement and as such will not come in for the determination of present values and internal rate of returns which consider only cash flows. They may however be relevant if the ARR is being used to appraise capital projects.

iv. Apportioned costs are purely cost accounting in nature involving sharing of costs based on certain common parameters such as area occupied. They are not relevant costs.

v. Old asset taken in for the purpose of a new project. The asset at the stated or fair value be treated as having been purchased for the new project hence an outflow. The scrap of it at the end of the project cycle be treated as an inflow.

vi. Year end and beginning of year cash flows should be treated as relevant cash flows for the year in year in question and earlier years respectively for example as year one and year zero cash flows.

### 2.1.12 Measure of Financial Performance – Return on Investment, Return on Assets and Net Profit Margin

Accounting information can be used to assess a company's financial performance. Accounting ratios are utilized in situations when accounting information is available. Return on assets (ROA), return on investment (ROI) and Return on Capital Employed (ROCE)are examples of accounting ratios often used for measuring financial performance of organizations. All the three ratios are profitability ratios by classification.

The return on assets (ROA) is a measure of a company's profitability in relation to its total assets. It gives an indication of how effectively management generates profits from the use of assets. Managers must ensure that the assets in use for generating income are put into effective and good use. The effectiveness with which this is done is measured by the return on assets. Capital will eventually move on to where it can create a competitive return if it is not utilized productively. The return on assets (ROA) is an appropriate accounting instrument for evaluating the overall efficiency with which a company's assets are used to generate net income from operations. It is a measure of profitability as well as a measure of financial efficiency. The return on capital employed on the other hand measures how efficiently a company's available capital is utilized by management. It also reflects management's ability to deploy capital to generate income / profits. The single best overall measure of operating performance is certainly return on assets. The return on assets is measured by dividing the operating income by total assets. The higher the ratio the better for the organization. Higher ratio confirms efficient utilization of assets to generate income / profits.

The rate of return on equity (ROE) is an appropriate statistical tool for determining how well debt is performing in the capital structure of a company. The return on equity is arrived at by dividing net

income by average total firm equity. It is a measure of equity's net worth. For companies that use debt financing as well as equity in its capital structure the return on equity should be higher than return on assets. If the ROE does not exceed the ROA, it shows that debt capital is not earning enough to cover the interest payments. It is an indication that debt capital is not being efficiently deployed. The return on equity (ROE) is an important statistical tool for determining the performance of equity capital. Managers usually have other investment opportunities wherein funds could be invested. A strong basis is required for evaluating the performance from the alternatives compared to results from the regular business investments. The return on investment (ROI) is that which enables the manager to measure how efficiently the investment has been generating returns. It measures income or profits as a proportion of the amount of capital investment. It is a performance measure used to evaluate the efficiency or profitability of an investment. It can also be used to compare the efficiency of a number of different investments. It measures the amount of return on a particular investment relative to the cost of the investment[23]. It is often used interchangeably with return on assets except that while ROA measures in general the ROI is with respect to specific investment. ROI measures how well an investment has performed while ROA measures how well assets have performed.

Profit per unit (Naira) of product generated or output is referred to as operating profit margin. A low-cost producer is a company with a high operating profit margin percentage. Increased revenues generated per Naira of business assets, as demonstrated by the asset turnover rate, is another strategy to improve performance. The asset turnover rate (ATR) is produced by dividing gross firm revenues by the average value of all company assets. Operating profit margin and asset turnover are the two primary profit variables that affect the return on assets. Management of an organization must as such influence these ratios in order to enhance financial performance. An increase in either or both will

raise ROA and is usually indicative of better financial health. This analysis is shown in the following formula:

i) Operating profit margin (OPM) = Net profit / Total revenue or sales

ii) Asset turnover rate (ATR) = Total revenue / Total assets

iii) Return on assets (ROA) = i) * ii)

= OPM * ATR

= (NP / TR ) * (TR / TA)

= NP / TA

= Net profit / Total assets = ROA or ROI

An improvement in the operating profit margin (OPM) as well as an improvement in the asset turnover rate (ATR) will definitely lead to an enhanced return on investment. To the extent that an amount incurred on capital investment can improve the numerator on either side (the net profit and the total revenue) that investment is worthwhile.

**2.1.13 Financial Performance – Conceptual Definition**

From the detailed empirical review carried out this study shows clearly that financial performance definition is not cast in stone. The general definition sees financial performance as the indices often measured in ratios, by which the performance and / or wealth of an organization is measured. Financial performance may be defined by reference to the particular aspect of an organization's business for which emphasis is being placed or the goals being pursued by the organization for the period under review. It may be measured from the point of view of:

1. Utilization of fixed assets
2. Utilization of fixed assets
3. Utilization of debt capital
4. Utilization of equity capital
5. Utilization of investment
6. Utilization of short term borrowed fund
7. The Government as regards meeting tax obligation

In each of the above cases the financial performance may be viewed as:

i. The efficiency with which total assets are being utilized to generate income
ii. The efficiency with which fixed asset is being utilized to generate income
iii. The effectiveness in the utilization of debt capital to generate returns which ultimately is expected to enhance the value of the firm or owners' wealth
iv. The effectiveness with which equity capital is being utilized to generate returns and hence enhance shareholders' wealth
v. The efficiency with which investment is being utilized for the purpose of generating expected returns
vi. A company's ability to meet the repayment of its short term liabilities and interest payment.
vii. The extent to which profit covers tax liability.

The above definitions are often expressed in ratio terms whereby a variable in the financial statement is expressed as a proportion of another variable. In performance measure as a subject the dependent variable is often the numerator while the independent variable is the denominator. The extent to which the independent variable (denominator) is efficiently utilized to produce the dependent variable

(numerator) is the performance indicator. The numerator or dependent variable is expected to meet the need of the denominator which is the independent variable for this purpose. To be explicit, in the calculation of a ratio called 'return on investment':

- the dependent variable or numerator is 'returns or earnings before interest and taxes'
- the independent variable or denominator is the 'total investment'
- the investment is required to generate returns according to estimate
- if at evaluation stage 'investment desires 20% returns' and at the end of the day the returns is just 15%, the return has not met the need of investment
- the calculation is shown thus:

return on investment = returns / investment * 100

The stated financial performance indicators fall under specific classifications in accounting and finance. The classifications include: profitability ratio, efficiency ratios, liquidity ratios, solvency ratios.

**T**hese definitions which are seen from different perspectives indicate, as the stakeholders' theory says, that an organization serves a number of interests whose needs should be met as circumstances determine; otherwise the organization has failed financially. From this analysis to define financial performance or key performance indicator strictly from the shareholders' point of view can be considered to be too narrow and too simplistic. It will, in such a case, be seen as the return on equity or the efficiency with which equity capital is used to generate returns and thus maximize shareholder's wealth.



### 2.1.14 Causes of Profitability / Increased Financial Performance

Do CBTs have Direct Effect on Profitability and Financial Performance?

The above heading takes us to a consideration of the factors which have direct effects on profitability of a project or venture. In looking at this we consider direct causes of a project's profitability. These are issues which unmistakably lead to profitability or enhanced financial performance of projects / companies. They include:

i) Number of Production Units. This may include such things as number of production lines and number of production plants for manufacturing companies. The number of acres of land acquired productively by farmers is inclusive. There is no gainsaying that the more the number of these factors which are productive and profitable the better it is for the organization and for overall financial performance. If a production line can generate one million Naira (N1million) profit per week; and increase of the production line to two will expectedly generate a minimum of N2million per week. The issue of production line is very relevant to this study.

ii) The price of products: This can also be referred to as the value of the product. It is the price paid by customers for a unit of product sold to him. There are factors which determine the pricing of products. Clearly, organizations do not have the prerogative power over price determination. The market forces, competition, company's share of the market as well as product's life cycle stage contribute to price determination.

iii) Marginal cost consideration. These are costs which vary directly with the level of production. When production level increases the total variable cost increases. Similarly when production level reduces, total variable cost reduces. It is tied strictly to production. Ability to minimize the variable costs per unit without compromising the quality of the

product is key to profitability and enhanced financial performance of an organization. If cost per unit of a product is reduced, profitability per unit of same product is enhanced**.**

iv) Yield: This is measured in yields per production unit. This will answer such question as: how many litres of CB drink are produced on one line per hour / per day / per week? The more it is the better for the organization.

v) Overhead Costs. These are costs other than direct / variable costs incurred in bring a product to a saleable state or condition. They are costs deductible from the gross income in a bid to arriving at the profit or loss of an organization. Excessive overheads do write off the whole lot of efficiency in production revealed by gross profits.

vi) Other factors exist such as market share, demand level, resource allocation efficiency, size of company and level of awareness created.

Having reviewed all the above a striking question is 'where does the technique of evaluating capital budgeting projects comes in?' Where does the technique for deciding on the 'choice of production line' come in? Where does the technique of evaluating 'additional plant(s)' come in? Having not seen the capital budgeting techniques as factors of profitability above, does it mean that the CBTs have no place in determining the financial performance of an organization? Number of production lines has direct influence; number of production plants has direct influence; price of goods has direct influence on product profitability. This means that number of production lines and number of production plants as well as price, to mention but a few, 'cause' profitability directly. The CBTs are means of determining the projects upon which the above factors have direct influences. To the extent that they influence the choice of profitable projects it will seem that their effects on profitability are not direct. This analysis enables us to see the factors which cause

profitability directly as well as factors causing profitability indirectly. The issue of direct and indirect factors of profitability as seen in this analysis may have been a major cause of the conflicts existing on whether CBTs have correlation with financial performance of organizations. Researchers investigating the relationship between the capital budgeting techniques and financial performance from the point of view of 'direct relationship' may have concluded that there were no relationships while those who investigated from the indirect point of view may have concluded that relationships existed. It is the objective of this study to establish a relationship whether such relationship be direct or indirect.

### 2.1.15 Measure of Financial Performance - NPV, IRR, ARR, PBP

Positive net present value, early payback period and accounting rate of return can in themselves be seen as a measure of profitability or organizational performance. In this case the capital budgeting techniques can serve dual purpose: being a technique for evaluating viability of a project as well as being a key performance indicator for measuring profitability as the project is progressing. It is not out of place therefore to state that, to the extent that net present value is positive it provides a measure of profitability. Same is the case with the IRR; to the extent it is higher than cost of capital it should lead to a profitable position for the project. Cash flows after the discounted payback period method should lead to profitability for the project. Similarly the accounting rate of return, to the extent that it satisfies criteria for accepting profitability, measures profitability. The re-evaluation of the projects should be done during the lifespan of the project using the same technique of evaluation. For example a positive NPV during the re-evaluation should lead to a profit position for the organization except there are unforeseen circumstances leading to unexpected costs or losses. The ARR is often criticized on definitional ground as well as on the fact that it uses accounting profit. In order to measure financial / organizational performance accurately using ARR, the accounting profit should be redefined by

adjusting for non cash flow transactions and subjecting the result to discounting. The result which may be called 'adjusted accounting rate of return (AARR)', can be comparable with the results when the NPV, PI, IRR and the PBP are used.

## 2.2 Theoretical Review

This review commences by making reference to three theories that guide this project. The theories help in the analysis of the independent and dependent variables on capital budgeting techniques and performance analysis. The theories are: the shareholder's theory, the Tobin's q theory as well as the real option theory. Contained herein is a review of the works of others, related to this study. Reference has been made to books, journals, internet writings and magazines.

### The Stakeholders' Theory

This is a theory of organizational management and business ethics which states that multiple parts are impacted by stakeholders such as employees, suppliers, and creditors, government and the political environment[24]. The theory says that a company's real success lies not only in meeting the financial needs of its shareholders but in satisfying all its stakeholders. There are non shareholders who have significant interest (stakes) in an organization. The stakeholders' theory emphasizes that the need and desire of stakeholders should be put in the forefront by organizations when decisions are being taken, such as could affect the fortune of the organization. This is akin to the marketing theory which indicates that an inescapable characteristic of successful marketing is starting from a consideration of the needs of the ultimate end users before designing or redesigning the form of a product. This theory indicates that contrary to the usual analysis that an organization exists for the shareholders and that the desire of the owners is primary, stakeholders' theory states that there are other interested group called the stakeholders. The interest of these other stakeholders must as well be protected. There is no

gainsaying that any of the groups in question can take an action against an organization if the need arises such as for liquidation or recovery of monies lent depending on the relationship between the party and the company. Numerous articles cite Freeman, author of 'strategic management: a stakeholder approach' as the father of stakeholder theory[25]. The role of various internal and external stakeholders in governance of higher education institutions have been redefined by managerial agenda of governance[1].

**Tobin's Q Theory**

Tobin came up with the q theory of investment which connects a firm's investment decisions with oscillations in the stock market. The q theory was originally defined as the market value of a firm's asset divided by their replacement value. In macroeconomics it was seen as a way of understanding investment policy. If the financing of a capital project is from the proceeds of its shares in the stock market its share prices reflect the investment decisions of the firm. James Tobin argued that a firm's investment level should depend on the ratio which the present value of existing capital bears to the replacement cost of capital. The theory is that firms will want to increase their capital and do fresh investments when q>1. This leads to more savings and profitability, a position which accords with maximizing the value of stakeholders. Under this condition we expect investment and profitability to be high. If q is less than 1 it is costlier and less profitable to embark on the new project. This theory can be very relevant in a decision process of whether to buy an existing firm / property or build a new one from the scratch. Tobin reviews the value of a existing one in the light of the cost of building from the scratch. The value of the existing is expressed as a proportion of the cost of the new one to build from the scratch. If the proportion is represented by q, then Tobin says a decision would be made if q is greater than one or less than one. All things being equal if q >1 the decision would be to build from scratch as it is cheaper to do so. If q is less than 1 then go for existing. It may also happen that q=1; in

a situation such as this both projects have equal weights in the decision template. Management may choose any of the options. It is easier to reconcile the Tobin's q theory with other approaches to investment all of which lead to same basic results.

**The Real Option Theory**

This is a modern theory showing how to make decisions when the future is uncertain. A real option is a choice available to a firm concerning an investment opportunity. It has suddenly become a popular area of study in business schools across the world as well as in the boardroom. A real option is a choice available to a company with respect to an investment opportunity. This theory does not apply when decisions on derivative financial decisions are being taken. They apply essentially to capital budget decisions involving tangible assets. This theory indicates that he who has financial options has the liberty to utilize his finances the way he desires. One is essentially not obligated to spend money in a particular way. He has a choice to buy or not to buy, to build or to buy outright, to introduce a new line of production or not. Under the option theory the owner of fund determines when and where to make a capital budgeting investment decision as against the traditional approach which tends to believe that when the net present value of a proposed project is positive then fund should automatically be committed. The traditional view seems to take investing as an obligation the moment a project meets the approval criteria. When the cost of investing in a project is slightly less than the benefit, net present value approach says go ahead but the options theory says, you may consider waiting for a while perhaps more favourable results would evolve. This is for one who has the money. One who does not have the resources is under pressure and has no options.

In a paper titled capital budgeting practices (analysis techniques, discount rate estimations and risk assessment methods) among Pakistani listed firms it was concluded that the theory–practice gap is low

as Pakistani listed firms are using discounted cash flow methods of capital budgeting and preferring net present value over internal rate of return. Similarly, weighted average cost of capital is estimated using target value weights. For risk assessment, sensitivity analysis and scenario analysis are the dominant approaches; however despite the theoretical superiority, the use of real options is very low. Overall, investment decision responses significantly differ across firm's demographics and executive characteristics[20].

**The Specific Theories Underpinning this Study**

Considering the above theories in relation to the study there are four major ones that underpin the study. These are particularly relevant to the study. They are:

- stakeholder's theory
- the Tobin's q theory and
- the real option theory.

The impacts of each of these ones are hereby discussed.

The stakeholders' theory is particularly relevant as it shows that organizations exist not only to meet the needs of the shareholders but also to meet the needs of other organizations have to deal with directly or indirectly. These are firms, individuals, corporate organizations who have an interest or stake in the company under discussion. The interests of all these have to be built into the financial goals and objectives of the firm. If an organization succeeds in meeting the total

dividend needs of shareholders and it is not able to repay loans and advances and service the loans from banks there is no gainsaying that there may be crisis. The interest of the supplier of the capital projects which we try to evaluate is to be factored into the strategic plan of the organization.

Sometimes the capital items are acquired on credit. Sometimes guarantors have to execute a document on behalf of the company for the whole transaction to be consummated. All these have costs and must of necessity be factored into the evaluation process. The interest of all these ones need be factored in until the obligation of the company towards them is fully redeemed. The key limitations of this theory include: i) the fact that some stakeholders or group of stakeholders yield very little influence on firm's decisions. Those with decision power may not be able to influence decisions at all times. Generally the law does not give a voice to non-shareholder stakeholders; they have no voting rights, ii) the fact that it is impossible for the company to satisfy the needs of all stakeholders at the same time. Needs of the stakeholders may conflict in that organization cannot meet them simultaneously. Critics stated that the theory did not appreciate the moral status of shareholders[26,27].

The Tobin Q theory is especially relevant when capital budgeting decisions involving alternatives are being considered. When decisions are being taken on 'buy or build', 'acquire existing or construct', q theory is especially relevant. The cost of buying existing is compared with the cost of building, by expressing the earlier as a ratio of the latter. A ratio greater than 1 supports building. There is no gainsaying that this theory accords with the techniques of capital budgeting such as NPV in that, NPV, through discounting, seek profitability for the firm while the q theory, through cost savings, seek profitability of the firm. A major limitation of this theory with respect to capital budgeting is the fact that management do not consider quantitative factors

only while taking investment decisions. There are qualitative and social responsibility factors which may need to be considered at some point in time. This theory also assumes that replacement costs for all assets are available. Critics indicated that Tobin did not anticipate that scholars would use q to assess the value of firms[28]. It's stated to be a misuse.

The real option theory is relevant in practical terms in capital budgeting decision as it considers other qualitative and quantitative factors that may be brought to bear in taking capital budgeting decisions. A firm that has funds determines where and when to make capital investment. Both qualitative and quantitative factors are brought to bear. Real option recognizes the place of positive net present value in capital budgeting decision but also assumes that a firm has a choice and not under obligation to invest when the NPV is positive. Managerial flexibility is given consideration. Limitations of this theory include: i) when to exercise the option is not defined, ii) an expectation that a better investment option / opportunity could arise may fail. Option theory says wait, when the net present value of a project being evaluated is negative. When the net present value is fairly positive option theory says you may invest but advises the firm waits until circumstances become more favourable.

**2.3 Review of Empirical Studies**

The empirical review enables us to discuss the works that others have done in relation to the subject matter, capital budgeting techniques and financial performance of manufacturing organizations in Nigeria. This is as far as they impact the study and enable conclusions to be reached.

A study was conducted recently to investigate if there was a relationship between capital

budgeting techniques and the financial performance of Kenyan Commercial State Corporations[29]. The particular goals were to determine the relationship between Accounting Rate of Return and financial performance of Kenyan Commercial State Corporations, as well as the relationship between Net Present Value and financial performance. Data was acquired from commercial state corporations utilizing a standardized financial statement, using census research method. The study used secondary data and gather information from the companies' financial statement. Descriptive and inferential statistics were used to analyze the data. The association between independent variables and the

financial performance of commercial state corporations was established using multiple regression analysis. The findings indicate that accounting rate of return has a negative impact on commercial state firms' financial performance. On the other hand, the net present value has a positive impact on commercial state financial performance. According to the findings, net present value has a positive link with financial performance; however accounting rate of return has an adverse association. The study, however, did not indicate in specific terms the usage of and impact of other viable methods such as the internal rate of return and the payback period method, one key issue that will be addressed in this study.

A researcher conducted a study to determine the influence of capital budgeting approaches on commercial bank financial performance[7]. The study not only explained why capital budgeting decisions were critical to commercial banks' overall performance, but also how to improve the methodologies used in decision-making. Both qualitative and quantitative research methods were used. A questionnaire was created to gather feedback from workers of Sierra Leone's commercial banks. The results obtained from the respondents workers revealed that using the payback period

strategy in capital budgeting decisions is substantially connected with commercial bank performance, followed by three other strategies, with the exception of the internal rate of return technique which showed a negative relationship. Both the correlation and regression results were negligible. Banks are formed to achieve their specified objectives, which include profit, and capital budgeting decisions must play a vital role in achieving these objectives. It is critical to understand that, due to the prevailing bank rivalry in the study environment, modern banks must adapt and participate in smart capital budgeting decisions in order to gain an advantage over their competitors. One of the most essential policy decisions that a company can make is capital budgeting. A company that does not invest in long-term investment initiatives cannot optimize the interests of its stakeholders, particularly

shareholders' wealth. Capital budgeting decisions that are optimal enhance a corporation's principal goal – maximizing shareholder wealth – while also assisting the firm in remaining competitive as it grows. Though the study was done along the West African coast (Sierra Leone) the need to conduct similar study here in our environment cannot be overemphasized. This study will be with reference to the manufacturing sector in Lagos area of Nigeria.

A study conducted in Rwanda conducted to investigate the effect of capital budgeting investment decision on organizational performance in Rwanda indicated that the capital budgeting investment decision had long been a common concern in business survival[30]. Several companies were said to have lost their identities or been liquidated as a result of poor capital budgeting decisions made at one point in time or the other. The researcher indicated that Rwanda in uses capital budgeting to manage its scarce resources. Rwanda, on the other hand, does not establish a long-term technology base that can support economic growth, and its capital budgeting and

investment decisions are rarely properly explained. The study revealed that Rwandan enterprises do not get significant benefits from budgeting, resulting in poor performance and loss. Based on these common industry difficulties and the impact of globalization on industries, it is critical to employ effective methods before making any investment decisions. Capital planning is critical since the decisions made have a direct impact on the organization's future growth. Use was made of exploratory research involving gathering qualitative data using questionnaires. Respondents numbered 70 who were employees in the finance and accounting units of the selected organizations. Analysis of the results revealed that capital budgeting has been of tremendous use to improve performance of various organizations. The Payback Method, Net present Value, Internal Rate of Return and discounted payback period are typical methods used by some organizations for capital investment assessment.

A study investigated the extent of the use of capital budgeting techniques in evaluating investment projects in Jordanian industrial companies[31]. It was to determine the extent to which capital budgeting techniques may be used to select an appropriate project for investment. The study focused on capital budgeting approaches including Net Present Value, Internal Rate of Return, and Pay Back Period, which are regarded the most important tools in decision makers' hands when determining the best viable alternatives. The success or failure of a corporation is entirely dependent on the budgeting approach adopted. In other words, the importance of budgeting processes is linked to final profit or loss. The study indicated that organization's future is determined by management's capital budgeting choice and the success of the strategy adopted. In order to meet the study's objectives, a questionnaire was developed with the goal of covering the majority of Jordanian industrial enterprises regardless of their size or ownership. The statistical tool SPSS was used to examine the resolution data. The study found that 58 percent of Jordanian industrial firms employ the NPV method. The Payback Period is utilized by 22% of respondents, the Internal Rate of Return is used by 12%, and the remaining respondents favoured mix of the Accounting Rate of Return, Profitability Index, and sensitivity analysis. The study had in its sample both small, medium and big companies meaning that like was not being compared with like. The study however did not consider the impact of the methods of capital budgeting on the financial performance of the selected industrial companies. This will form the basis of this study.

A study was conducted on the appraisal of capital budgeting techniques and its effect on the performance of manufacturing firms in Nigeria[6]. The study adopted a cross-sectional design using a mixture of primary and secondary data. In this study, a total of 76 questionnaires were administered, 72 were returned, and the performance measures according to the data obtained were analyzed for a seven year period (2011-2017). The study found that changes in the existing risk of a firm, utilizing

good capital budgeting method and firm size will go a long way in positively affecting the specified performance measure. Also, capital intensity has a direct relationship with the specified performance measure of manufacturing industries in Nigeria. The study is wholly on Nigeria which seems too wide to cover in a study. The study indicated that most firms in Nigeria use sophisticated techniques but changes do not seem noticeable as regards the impact of CBTs on the level of performance. There is a need to confirm which methods are the good ones that will make impact on performance. This study however restricted the geographical scope and coverage of the study to Lagos area; to be of general application to Nigeria.

A number of studies of companies listed in the Nairobi Stock Exchange have been conducted. A researcher conducted a similar research investigating the influence of capital budgeting techniques on financial performance of manufacturing companies listed at Nairobi Securities Exchange (NSE)[32].The study used a census survey to collect data from eight manufacturing companies listed on NSE. Primary Data was collected using a questionnaire and Secondary data was collected from the published financial statements of the companies. Data was analysed using SPSS computer programme to find the correlation coefficient between the independent variables and the dependent variable. The findings of the study revealed that Payback Period and performance were positively and significantly related (β=.083, p=0.000), Accounting Rate of Return and performance are positively and significantly related (β=.300, p=0.000), Net Present Value and performance were positively and significantly related (β=.095, p=0.037). Finally, the findings revealed that, Internal Rate of Return and performance were positively but not significantly related (β=.030, p=0.296). The study concluded that net present value, accounting rate of return and payback period, positively and significantly affect the financial performance of listed manufacturing companies in Kenya. However, internal rate of return was found to be positively but not significantly related to financial performance. In addition, the study concluded

that firm size partially moderates the relationship between Capital Budgeting Techniques and Financial Performance of Manufacturing Companies Listed on Nairobi Securities Exchange (NSE).

An investigation was conducted on the current capital budgeting practices in Bangladeshi listed companies providing a normative framework (guidelines) for practitioners[33]. In this study, data were collected with a structured questionnaire survey taken from the chief financial officers (CFOs) of companies listed in the Dhaka Stock Exchange in Bangladesh. Garnered data were then analyzed using descriptive and inferential statistical techniques. The results found that net present value was the most prevalent capital budgeting method, followed closely by internal rate of return and payback period. Similarly, the weighted average cost of capital was found to be the widely used method for calculating cost of capital. Further, results also revealed that CFOs adjust their risk factor using discount rate. It was further suggested that the findings of this study might help the firms, policymakers and practitioners to take a wise decision while evaluating investment projects.

An investigation of the influence of capital budgeting decisions on company growth in Nigeria was conducted[34]. Secondary data involving recourse to annual reports and account of selected organizations as well as questionnaires was the main methodologies adopted. Multiple regression analysis was also used to analyse the data. The researcher reported that previous studies in Nigeria on this subject concluded that capital budgeting decision has no implication on firm's growth in Nigeria. The study revealed there is no significant positive relationship between independent variables (acquisition of long-term assets, investment appraisal techniques, and outsourcing expenditure) and dependent variable (return on asset). The return on asset is the dependent variable while the fixed assets and capital budgeting techniques are the independent variables. As a result, the research found that capital budgeting decisions in Nigeria have little bearing on company growth. Several capital budgeting

approaches were examined to see how they related to the financial success of the company, i.e. when compared to other techniques. The methods used to analyze investments involving risk and uncertainties in capital budgeting include scenario analysis, sensitivity analysis, decision tree, and simulation technique. Findings indicated that managers utilized scenario analysis more frequently in reviewing risk analysis. Managers also preferred the cost of equity to the cost of borrowing or the weighted average cost of capital in defining the minimal rate of return for evaluating viable initiatives.

A study was reported to show the impact of capital budgeting techniques on commercial bank financial performance and how to improve the use of the techniques in making decisions[7]. Qualitative as well as quantitative research methodology was adopted in the study. A questionnaire was developed to get the opinion of employees working in11 commercial banks in Sierra Leone. The results obtained from 187 employees was observed and it showed that the implementation of the payback period technique in capital budgeting decision is highly correlated with commercial banks performance followed by three other techniques except for the internal rate of return technique that was negative and insignificant in both the correlation and regression results.

A study to determine the effects of capital budgeting on the performance of the corporate organizations in Nigeria was conducted in an attempt to evaluate the effects of capital budgeting on the performance of corporate organizations in Nigeria[35]. The study found out that capital budgeting has significant effect on profit after tax of corporate organization in Nigeria. The researcher adopted secondary data in getting the required information and a historical research design was also adopted. In testing the hypotheses, simple regression analysis was used. The findings revealed that there is a significant effect on profit after tax of the corporate organization in Nigeria. Like some other studies the coverage of the study is wide and this study limited the scope to Lagos area which is the industrial hub of Nigeria.

Another study conducted examined the effect of working capital management on the financial performance of quoted conglomerate firms in Nigeria for the period 2006 to 2016[36]. Secondary data were obtained from ten (10) quoted conglomerate firms' financial statements and structural equation modeling was used for the analysis. The study revealed that account payable period and cash conversion cycle have positive effect on financial performance; while account receivable period and inventory turnover period have negative effect on financial performance. The general result indicates that there is significant effect of working capital management on financial performance return on equity (ROE), return on assets (ROA) and return on investments (ROI) of quoted conglomerate firms in Nigeria. Though the study is on working capital management it is a complementary study to capital investment or capital budgeting. Both are expected to ensure organizational objectives are achieved.

A study was conducted to examine the impact of capital budgeting techniques in project evaluation. The study's population was employees of the ministry of commerce and industry Borno State, Nigeria[37]. For sampling, the study was conducted through simple random sampling technique, also questionnaires were distributed. According to the statistical analysis, the chi-square showed that, the capital budgeting techniques is not an ideal way of evaluating capital projects in the organization. This study concluded that capital budgeting techniques is not an effective way of project evaluation in the selected ministry. However, the study noticed some reasons behind its ineffectiveness as few or absence of competent and dedicated staff toward project appraisal. Therefore, the study recommended that the government should train the existing staff through regular relevant workshops and also to employ competent staff that can handle the areas effectively.

A study was carried out in Turkey. The main objective of the study was to determine the relationship between capital budgeting and financial performance in manufacturing companies[38]. The study

revealed that capital budgeting had a very significant effect on profitability of the organizations investigated. The study was conducted in Mukwano firms in Kampala Uganda; the design was cross sectional involving the use of mainly quantitative research design in the data collection. The data was collected from the respondents using the questionnaires sample population was 240 in number of which the response rate was only 152 translating to 63.33% response rate. Usable data analysis technique, in view of the fact that information can only be sourced through analysis of data, was the statistical package called the SPSS version 19. After collecting data and before analysis, completeness thereby and the internal consistency was checked. The analysis was done basing on frequency and percentages for the demographic information and mean, standard deviations were used to anlayze capital budgeting and profitability levels. The relationship between the variables, independent and dependent, were determined using the pearson correlation statistical tool. Multiple regression analysis and correlation were also used to measure the degree of correlation between variables. The study revealed that there was clear evidence that significant relationship exists between five dimensions of capital budgeting decisions and profitability of the organizations. Findings were that there were positive relationships between capital budgeting and profitability of the companies under study. The study was based firms in a group. It may not be enough to make general conclusions from the results of the study; hence this study.

In Nigeria a research was conducted a research on capital budgeting techniques: estimation of internal rate of returns. The essence of the study was to determine a seamless calculation of the internal rate of return[8]. The traditional trial and error method involving the calculation of two net present values, one positive and the other negative before an IRR could be calculated is considered laborious. The researcher stated that the trouble associated with estimating future cash inflows expected from a capital project is so large that the stress involved in the calculation of the internal rate of return must not be

added. The sheer size of the amount necessarily incurred on capital investments makes it highly necessary that proper process of evaluation must be done before incurring cost. The study was to simplify the process of estimating and arriving at the internal rate of return. The idea was to do without the trial and error approach. The study allows the calculation the internal rate of return even when net present value at two levels are positive or the two are negative instead of the use of interpolation. Researcher advised that investment analysts should analyse projects with care and caution so that investors will not be misguided when sourcing for fund. Cost of fund should be lesser than the internal rate of return for the deal to be profitable.

A study on the conceptual analysis on capital budgeting and cost evaluation indicated that capital budgeting decisions are crucial to a firm's success for a number of reasons[10]. He defined capital budgeting as the process of evaluating capital investments and allocating scarce resources towards acquiring such capital assets. The enormity of the capital outlay, the fact that the organization concerned must plan appropriately the financing of the project as well as repayment on funds raised for the purpose are key reasons why companies take due care in taking the capital budgeting decision. The fact that capital budgeting decisions require commitment that span over a long term, with its attendant risk and uncertainties is another factor why it is considered a crucial decision for management and organizations. Attention must be paid to the timing of investment; this is considered important. He mentioned that the investment has opportunity costs which include large outlay of capital, for the future which is not determinable with certainty. Any poor decisions can translate to a very huge negative impact on the organization, the investment and of course on the shareholders' value. For this reason the evaluation of the projects must be done with due diligence. Qualitative and quantitative factors are required to be considered while taking investment decisions. The investment appraisal techniques are based on the future unknown factors, inclusive of the high-

risk factors. An investment appraisal is mainly concerned with correct discounting factors or cost of capital which is used to arrive at the expected values of the series of cash flows and hence the investment appraisal viability. The accounting rate of return and pay back method can be used as a first screen method to select the best investment among alternative investments. The net present value was stated as being the best method and most favoured for investment appraisal. Methodology of this study was however not stated clearly. Concerning the cost of fund the researcher stated the necessity of paying close attention to the functioning of the financial market especially when the project cost is large and it is necessary that the fund must be sourced. This is because the cost of fund is directly related to the interest rate or investor's expected rate of return. The positive value of the investment appraisal is value added to the firm, and it can amount to enhanced return for the shareholders. Capital budgeting concept or investment appraisal techniques mean the same. It's a challenge to managers to balance long and short term issues for the business with a project. Capital appraisal technique looks at long term decisions, those spanning multiple years. The methodology adopted in this study was however not stated. Study was related to New Guinea.

Another research was carried out on the capital budgeting of corporate social responsibility[12]. It focused on the assessment of corporate social responsibility (CSR) investment projects from the economic, social and environmental (triple bottom) perspectives. One of the most relevant roles of CSR is alleviating the negative occurrences generated by corporate investments. Key objective of the corporate social responsibility (CSR) projects is to improve corporate sustainability instead of maximizing financial value creation. The projects must as such be assessed for their effect on the natural, social, and financial capital. Three questions to answer are: how efficiently will the projects reduce the negative occurrences being considered? What is the financial value of the project for stakeholders? How well can the project be sustained financially? Capital budgeting decisions that

stand the test of time must agree with corporate strategic plan of the organization concerned. A case study and an illustration included as part of the study showed that the findings of the paper are relevant and can be put to use. The study did not make due mention of the methods of capital budgeting in relation to corporate social responsibility. Neither was the relationship between capital budgeting and corporate social responsibility mentioned or given a place in the study.

An analysis on capital budgeting as a strategy for project performance in Kenya Rural Roads Authority was conducted and reported[39]. This study was guided by the objectives to establish the effects of policy on project performance, to investigate the extent to which expertise affect project performance, and to establish the extent to which financial resources affect project performance. . A structured questionnaire was developed and administered to financial managers and project managers in Kenya Rural Roads Authority. It was observed that policies on budgeting, expertise, financial resources, accountability and re-training measures affected the performance of project to a great extent. The study concluded that the decision of whether to accept or deny an investment project as part of a company's growth initiatives, involves determining the investment rate of return that such a project will generate. Asides from this, it wasrecommended that effective budget implementation should be facilitated through capacity building, robust systems and processes, prioritization close monitoring and evaluation.

Similarly, a study was set out to investigate the effects of capital budgeting techniques on profitability in selected companies in Eldoret[40]. To meet this purpose specific research objectives include determining the contributions of various capital budgeting methods on profit levels of selected companies were determined. The specific methods include the payback period, net present value, accounting rate of return, profitability index and internal rate of return .The study used a survey design with a targeted population of 110 tope level manager, departmental managers and supervisors of

selected companies found in Eldoret town. In this study, the common capital budgeting techniques used by selected companies in Eldoret town to make capital decisions were found: net present value, pay pack period and internal rate of return. The indicators of profitability projects in capital budgeting techniques include: positive net present value, short recouping periods, less risks of failure alongside high average income. The effects of net present value, payback period, and internal rate of return and profitability index on profitability levels include reduction of the cost of capital, increases amount of returns from the project and reduce level of risk of projects as the main levels of profitability. However, in the study, it was recommended that the following will improve the performance of the company and the profit levels if adopted: capital budgeting techniques, creation of a separate department to deal with project capital budgeting techniques and identification of suitable projects, mixing of project capital budgeting techniques of both traditional and modern to enable the business to circumvent the risks of project failure, listing of projects to be invested in order of priority before sourcing for their funding, computing the costs of finance for each source of a particular project and compare it with the expected future returns from each project, provision of enough finance to implement capital decisions in all organizations and creating an oversight body to foresee the implementation training of employees

To determine the application of capital budgeting methods and their association with firm performance among South African manufacturing firms a study was carried out[41]. A sample of 318 firms was surveyed. The response rate was 37%. The survey tested the application and impact of payback method, return accounting rate, net present value and the internal return rate. The return on assets was used as a measure of the firms' performance. From this study, it was noted that 15% of the firms employed the payback method, 8% used purely the discounting methods while the rest employed a mixture of both. Even though the managers were aware of the cost benefits of using the discounting methods, their responses involved the use of shortcuts and approximations. It was concluded that while

discounted cash flow methods play an important role in capital investment decision-making, their costs and proper application were extremely underestimated.

Another study was conducted with an objective of establishing the effect of budgetary process on financial performance of NGOs in health sector in Kenya, applying priority based budgeting theory[42]. In this study, the regression results revealed that budgetary process had significant influence on financial performance of NGOs in health sector in Kenya and tests for significance also showed that the influence was statistically significant (r=0.419). It therefore inferred that good budgetary management practices positively influenced financial performance of NGOs in health sector in Kenya. It was recommended that on formulation of policy, both management of NGOs and the Government should explore and implement sustainable policies and regulations that are geared towards improving budgetary management as a way of accelerating financial performance of NGOs.

### 2.3.1 Empirical: Measurement of Performance

Many consultants maintain that various initiatives and programs improve the performance of organizations. Nevertheless, many of these assertions have not been assessed. Indeed, even the optimal definitions or measures of performance remain controversial. Fortunately, when these propositions are assessed, the results are often encouraging. That is, practices that improve the commitment and attitudes of employees do indeed enhance many financial indicators of workplace performance[43].

Following were expressed as measures of organizational performance: profit, productivity, sales and market share, customer service, subjective estimates of financial performance, achievement of goals, measures specific to the industry and holistic measures (like measures of quality / process improvement applied in the Six Sigma paradigm in which defects, that is, anything that could

undermine customer satisfaction is detected and then eliminated)[44]. The writer stated that there are situations or periods in an organization whereby indices for measuring performance is not congruent with the goal of the organization for the season. He indicated too that there are measures which are specific to particular organizations. The writer stated too that there is no best definition of organizational performance. Measures of performance remain contentious.

A review of a contributing writer's contribution to Havard Business School Online reveals in his writing on 13 financial performance measures managers should monitor that financial performance measures are the key performance indicators (KPIs) by which the financial health of an organization can be measured. They are also called financial metrics for measuring organizational performance. They are measured in ratio terms and can be analysed under various headings thus: profitability, liquidity, solvency, efficiency and evaluation. Measures of financial performance include:

i. Gross profit margin (GPM)
ii. Net profit margin (NPM)
iii. Return on equity (ROE)
iv. Return on assets (ROA)
v. Total asset turnover (TAT)
vi. Inventory turnover (IT)
vii. Working capital ratio
viii. Quick ratio
ix. Total asset – equity ratio (a leverage ratio)
x. Debt – equity ratio (a solvency ratio)

The data required for arriving at the components of the KPIs are obtainable from the financial statements of the organizations concerned. The contributor expressed that there is no total or complete

good or bad KPI. Acceptable KPIs can only be measured by comparison with past periods, peer results, budgets and standards[45].

Some renowned economists reviewed what profit is and what it could be likened to under different shades. Each of these men defined profit in their own ways pointing to why profit should be a reward for entrepreneurship. In a way they looked at why providers of fund and entrepreneurs should be adequately compensated[46]. This is the ultimate goal of every capital budgeting process, converting the fund provided by the owners and stakeholders to profit. They see profit thus:

1. Profit as a rent. This was the work of the American economist named Walker. He indicated that profit is the rent paid to superior entrepreneur over marginal or less efficient entrepreneur. Critics say that rent and profits are not perfectly similar. While profits can be negative, rent cannot.
2. Hawley, another American economist says that profit is a type of wages. It is paid to the entrepreneur for services rendered. He has, like any employee, put in his skill and ability which requires a reward as appropriate. Critics say that wages are fixed while profits are not.
3. Hawley also defined profit as a reward for taking risk in a business. A risk has been taken when money is invested in a venture the reward of which is expected in an unknown future time. This is a function of an entrepreneur. He should be appropriately compensated for it. Men entrusted with investing this money must invest them profitably and this is the essence of our study of Capital budgeting techniques. Critics indicate that risk taking is not the only profit yielding function of the entrepreneur.
4. Schumpeter's defines profit as the reward for innovation. Capital budgeting is about innovation. Schumpeter differentiated between innovation and invention and indicated that innovation ensures a cost reduction. Not all managers are cost reducing agents; only exceptional

entrepreneurs are, and those ones should be adequately rewarded for the skill. This is showing us the reason of this study, to investigate how capital budgeting techniques affect profitability or performance. This theory does not consider other factors that lead to profitability. It says profits go to entrepreneurs for innovation.

5. Prof. Knight H. Frank defined profit as a reward for investing in uncertainties. He distinguished between foreseeable and unforeseeable risks. The latter he called uncertainty bearing while the earlier is general risks often borne by insurance companies. Risks other than those which the insurance companies can bear are borne by no other than the entrepreneurs. These should be seen as the genuine economic risks and are eligible for remuneration of profit. Profits result from non-insurable risks which entrepreneurs bear. They include:

- Risks that there would be recession, depression such as covid-19. Who pays for it?
- Demand risks. The fact that there may be no demand for a product or service

6. A scholar stated that defines profit as the marginal productivity of the entrepreneur. When marginal productivity is high, profits will be high. This is very difficult to calculate. Critics of the theory say that the marginal productivity of entrepreneur, just like of land and labour, is meaningless.

A scholar stated that profit is the difference between the price and the cost of production of the commodity. It is the result of progressive change in an organized society which happens only in a dynamic or organized society.

### 2.3.2 Summary of Literature Reviewed

Following the above reviews it was realized that there were divergent findings concerning the relationships between the independent variables viz net present value, internal rate of return, payback

period, accounting rate of return and the dependent variables depending on the emphasis of the study. Some researchers indicated that there were no relationships between the capital budgeting techniques and financial performance of organizations studied while some indicated that there were strong relationships between the independent and dependent variables of the organizations they studied. Another area of discrepancy is where researchers conclude that one or two of the capital budgeting techniques show significant correlation with the key performance indicators, and the other capital budgeting techniques showing either negative relationship or insignificant relationships. A Kenyan study revealed that ARR has an inverse relationship with financial performance while NPV has a positive relationship with financial performance[19]. A Rwandan study revealed that companies have folded up and lost their identities due to wrong capital budgeting decision they made at a particular point in time[30].

In the area of ascertaining what techniques of capital budgeting were often used or favoured, there were also differences in the findings from one researcher to the other. Some indicate that the sophisticated or discounted cash flow techniques are mostly favoured and that the traditional or accounting based techniques were not favoured. The opposite were noticed in other cases. Some also state that combinations of discounted cash flow and non discounted cash flow techniques were favoured. These show that there have really been no definite pattern regards the practice. No research work is capable of being invalidated by all these as the environment of studies differ.

Other noticeable issues include reference to factors determining the choice of capital budgeting. There are no streamlined bases for determining which technique to adopt.

In terms of costs used for evaluating capital projects the weighted average cost of capital (WACC), the cost of debt capital as well as cost of equity, all of these had been rated differently by different researchers as being favoured factors.

What is an appropriate key performance indicator for measuring financial performance? This too has not attracted clearly defined. While some use return on assets (ROI) some use return on assets (ROA), Operating profit margin (OPM).

Methodology is a key area of difference in the studies on capital budgeting decisions. The extent, if any, to which differences in methodology could affect the result of studies on capital budgeting and financial performance has not been clarified in studies on this topic.

This study is to enable the researcher do more in the Nigeria environment more so that many referenced works were from other countries. It is the intention of the researcher to contribute towards reducing the extent of these gaps especially with respect to relationship between CBTs and financial performance.

Though gaps exist regarding the relationships between capital budgeting techniques and organizational performance it is clear that reasonable relationship exists.

**2.4 Conceptual Framework**

The relationship shown underneath is a description of the relationship existing between the independent variables and the dependent variables. The framework is a perfect model showing how the capital budgeting techniques such as the NPV, ARR, PBP and IRR affect financial performance (measured by ROI / OPM) of manufacturing companies. It shows that a positive correlation exists between the CBTs and financial performance. The independent variable is capital budgeting

techniques measured by payback period, accounting rate of return, internal rate of return and the net present value method. Financial performance is the key dependent variable while return on investment and operating profit margin are the supporting dependent variables.

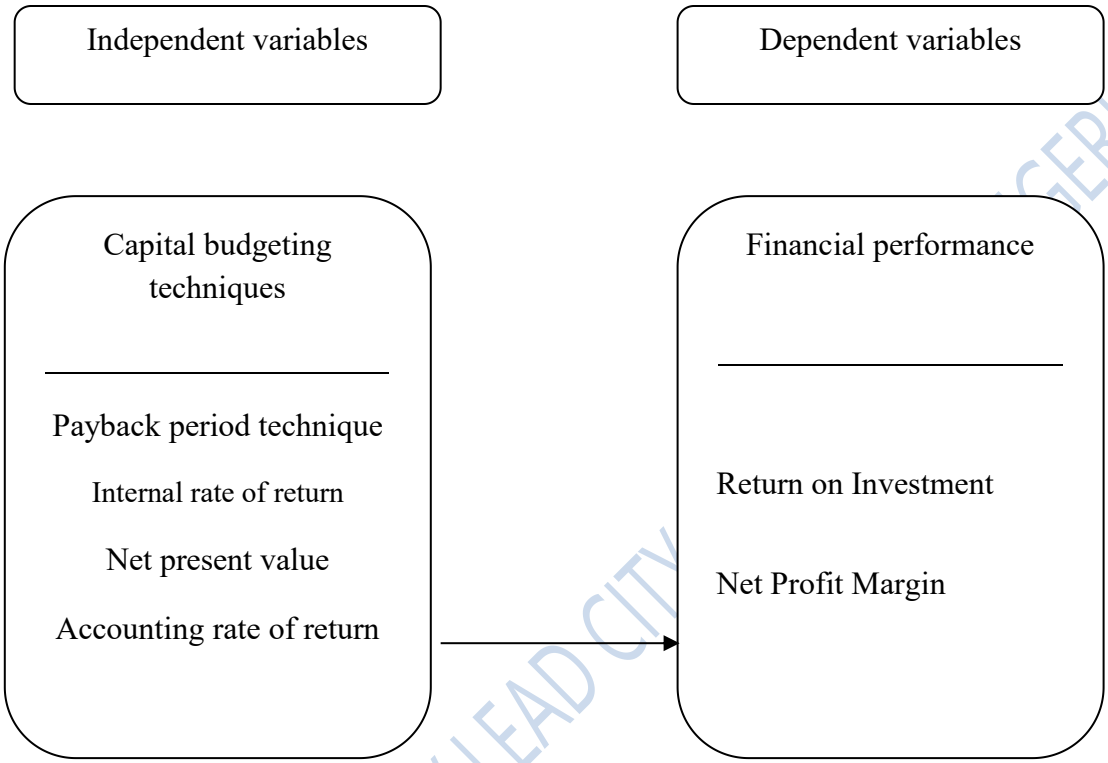


Figure 2.1: Relationship between Capital Budgeting Techniques and Financial Performance.
Source: Researcher's Literature Review on this Topic



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# Chapter Three

## Methodology

In this chapter attention was to key areas such as the research design, population of study, sampling and sampling technique, description of research instrument, relevant variables, validity and reliability of research instrument, data collection and data analysis.

### 3.1 Research Design

This study adopts a descriptive research design to assess / describe the relationship between capital budgeting techniques (net present value, accounting rate of return, internal rate of return, payback period) and financial performance (return on investment, net profit margin) of manufacturing companies in Lagos Nigeria. Descriptive design was used as it enabled the researcher to collect / gather information and do statistical analysis using frequencies, percentages, and other statistical methods. It also facilitated presentation and interpretation of data for the purpose of determining relationships and arriving at conclusions on this study. The design makes use of financial statements of three companies listed on the Nigeria Stock Exchange as source of secondary data. Selected manufacturing firms' profitability indicators enabled appropriate conclusions to be made. This descriptive research design is in use as it enabled the researcher to investigate what is the most up to date position on the effect of capital budgeting methods on financial performance of manufacturing companies in Nigeria. The financial statements reflect the position and view of the selected firms on this study.

Descriptive and inferential statistics was used for the analysis of data and for the description of relationships between the independent and dependent variable. This is adequate because the data is based on the statistical principle.

### 3.2 Population of the Study

Lagos State is a major industrial nerve centre of Nigeria with clusters of manufacturing companies all over the state. For this reason the manufacturing companies in Lagos State have been chosen purposively as the target population for this study. The listed manufacturing companies in Lagos form the population of study. By cluster sampling each of the clusters has an equal opportunity of being chosen.

| | |
|---|---|
| Number of companies chosen purposively App. iv | 3 |
| Number of years of financial statements determined per company (simple random) | 10 |
| Population of firms circularized with financial statements | 30 |

The determination of the population flows from the number of years chosen per company.

The research studies the effect of capital budgeting techniques on the financial performance of manufacturing companies. Hence the population of all manufacturing companies is relevant to this study. However since the study focuses on the manufacturing industry, the population can therefore be said to be the entire number of manufacturing companies in Lagos Nigeria. Data will be gathered by computing some techniques used in measuring capital budgeting from the published financial statements of these manufacturing firms which will cover a period of ten yearsviz year 2011 to year 2020.

### 3.3 Sample and Sampling Techniques

Sampling techniques involves the selection of a number of study units from a defined study population. This is used when population is too large to consider when collecting information from all its members. For convenience sake and accuracy, judgmental technique would be adopted and thus, used to represent the Population (sample). However, judgmental sampling will be used to select three manufacturing firms in the manufacturing industry which are Dangote Group, Flour Mills of Nigeria and Nestle Nigeria Plc. These three manufacturing firms are selected because of its duration of existence and proximity to source of data

### 3.4 Description of Research Instrument

The study used only secondary data that were extracted from the Annual Reports and statements of Account of the selected manufacturing companies. The data from the Annual Report are reliable. By chapter one of the companies and Allied Matters Decree 1990, Companies are required to keep accounts and to produce accounts that give true and fair view of the company. Companies are required to prepare the balance sheet, profit and loss account, name of directors and their reports, Auditors Report, and they must be published. Based on this, this study uses Annual Reports and statements filed in the Nigeria Stock Exchange. The data for this study include the payback period, internal rate of return, accounting rate of return, net present value, return on investment and net profit margin

### 3.5 Relevant Variables

a) **Independent Variables:**

Capital budgeting techniques

- Net Present Value technique
- Accounting rate of return
- Payback period technique
- Internal rate of return

b) **Dependent Variables:**

Financial performance – Return on Investment (ROI), Net profit Margin (NPM).

For the purpose of the test of hypotheses use was made of the ROI as being representative of measure of financial performance. This is in view of the fact that i) the ROI relates specific financial returns from an investment to that specific investment while the NPM is a measure of general performance, ii) the ROI and the NPM seems to move along the same direction most times and a test on both might amount to a duplication bearing no substantive value, iii)

correlating both with the CBTs might cause a confusion in the course of analysis of results, iv) though little differences and similarities are noted to exist between the ROI and the NPM one is not innately better than the other, v) in an investment situation the ROI seems a superior measure of performance.

### 3.6 Validity and Reliability of the Research Instrument

#### 3.6.1 Validity

Audited accounts of the companies used as secondary data are approved accounts by the Nigeria Stock Exchange, confirming validity of data contained therein. Research instrument adapted from other research works are with substantial additions and subtractions to suit the purpose of this work. Same was subjected to extensive professional review.

#### 3.6.2 Reliability

The alpha coefficient using the Cronbach's alpha formula on the research instrument, published financial statements, was determined to confirm the degree of reliability of the research instrument, the financial statements of the selected manufacturing companies, compared to the standard alpha coefficient of 0.7. The amount of support and the fact that the financials were published confirmed the validity of the instrument. Cronbach's alpha formula enabled a determination of the ability of and the extent to which the instrument produces the same result when applied over and over again. It is expected that the research instrument would produce same result in years to come just as the same result it has produced now. This is the essence of the test for reliability. Over multiple trials the same result is expected using the same research instrument, under same condition of study. This is reliability.

Validity test carried out enable the researcher to confirm that research instrument measured what it was designed to measure. Measure of reliability can be done using test-retest method, alternative form method, internal consistency method, the split halves method and inter-rater reliability method. Test – retest method makes use of the same instrument at a later time, say one year later. If the scores at the later time and the earlier one are highly correlated, like 0.7, they are said to be reliable. The alternative method involves the use of two instruments similar in content. This is applied on same samples. High correlation confirms reliability of instrument. A result of the Cronbach alpha computation revealing internal consistency of the research instrument shows clearly thus:



Table 3.1: Cronbach Alpha Computation, Determining Internal Consistency

| | | NPV | ARR | PBP | IRR | Total |
|---|---|---|---|---|---|---|
| Data Total | 30 | 250 | 169 | 184 | 220 | 823 |
| Std. Deviation | | 0.894 | 1.286 | 1.022 | 1.006 | 3.352 |
| Variance = $SD^2$ | | 0.799 | 1.654 | 1.044 | 1.013 | **11.233** |

Source: Survey Data 2022

Total variance(Q1-Q4): 4.510

| | |
|---|---|
| K | 4 |
| k-1 | 3 |
| Alpha coeff. **α** | (4/3) * (1-(4.510065/11.23344)) |
| | = 0.798019 compared to a standard of 0.7 |

This reveals a fairly strong internal consistency of the financial statement items and hence reliability.

### 3.7 Administration of Research Instrument and Method of Data Collection

The study makes use of the secondary data collection methods which essentially makes use of the published financial statements, designed to enable the researcher obtain from the respondents details relating to the independent variables as well as those relating to the dependent variables. The combination facilitates the use of correlation and multiple regression model for detailed analysis. Though respondents are being chosen carefully and diligently in view of the technical nature researcher adopted the secondary data from audited financial statements of three companies listed on the stock exchange. The use of the primarily and secondarily sourced data has not caused conflicts not to emerge in the various researchers' findings on this topic. Complementary details were obtained from the respondents to the published financial statements thus placing us in comfortable position as regards the purpose of this study.

### 3.8 Method of Data Analysis

Quantitative analysis of the data collected from the above was done by using the Statistical Package for Social Science (SPSS) software for analysis of data. The SPSS has in-built data manipulation tools enabling recording variables, transforming variables and analysis of complex statistical data. Use is made complimentarily of excel software where deemed appropriate, especially where not too complex data are involved. This is in view of its ability to organize data in comprehensible format that makes it easier to extract details to work on for the purpose of this study. Where complex data are involved excel enables researchers to customize fields and functions that generate calculations. Cells can be formula-driven (structured to generate formula) thus reducing stress of mental calculations and thereby saving researcher's time. The researcher is also saved the fatigue associable with manual calculations. It remains a reliable and affordable tool for researchers. The presentation is done using percentages,

mean, as well as pictorial representation which includes the use of pie charts, bar charts. These tools are inferential enabling inferences to be drawn with ease. The use of these methods of data analysis is in view of their simplicity and understandability even to willing users of this research work who are not professionals in the capital budgeting environment. It is a simplistic statistical analysis method widely used. Each piece / section of a pie chart stands for a different grouping of the definite data just as does a bar in a bar chart. These form great tools for reporting the research findings as they showed patterns and relationships in shapes and sizes. These are however not without their limitations. It may be seen as being overly simplistic, indicating that if there are too many pieces of data the charts and bars may be too crowded and become less effective. In this research this limitation is mitigated by making the data to be within a reasonable level.

On few occasions direct interviewing was used to enable the researcher elicit responses from some finance experts who are versed enough to give independent and firm positions on this study. It was quite expository and revealing. This was adopted to add further qualitative effect to the study.

Higher and middle level managers were majorly used in our sample sizes because capital budgeting decisions are not those handled by lower level staff in companies but by the executives. Finance managers and senior managers in organizations have advantages of being in the capital budgeting decision committees. These are the ones that are in position to provide responses appropriate to the research question. This makes for reliable input and conclusions.

# Chapter Four

## Results and Discussion of Findings

### 4.1 Introduction

This chapter is concerned with the presentation, analysis, and interpretation of data gathered from the financial statement. It also includes an empirical testing of hypothesis made about this study and each of their interpretations. It should be noted that Statistical Package for Social Science (SPSS) version 20.0 was used for analyzing frequencies and testing research hypothesis.

### 4.2 Presentation of Data

The researcher make use of secondary data in which three manufacturing companies list in the Nigeria Stock Exchange (NSE) and ten years financial statement of the manufacturing companies which is the sample size representing the study population of manufacturing companies in Lagos, Nigeria; critical analysis and interpretation is observed. The five commercial banks understudied for critical analysis include:

- ✓ Dangote Group
- ✓ Flour Mills of Nigeria
- ✓ Nestle Nigeria Plc

This chapter deals with the presentation, analysis, interpretation of data and discussion of findings. The chapter, in essence, deals with the detailed econometric analysis of the Capital Budgeting Techniques and Financial Performance of Selected Manufacturing Companies in Lagos State Nigeria. Data on Net Present Value (NPV), Accounting Rate of Return (ARR), Pay Back Period (PBP), Internal Rate of

Return (IRR), Net Profit Margin (NPM) and the Return on Investment (ROI) for the period 2011 – 2020 were obtained from the annual reports and accounts of the selected Manufacturing firms.

In this chapter, the empirical results based on the formulated regression models in the preceding chapter were presented, while interpretation and discussion of each result is aligned with the stated objectives. It also provides the platform on which conclusion and recommendations are based.

### 4.3 Descriptive Statistics

This section of the analysis provides an overview on the data set while attempt is also made to describe the main attributes of the data. The descriptive statistics of the data series is shown in table 4.1.

**Table 4.1: Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| **PBP** | 30 | 3.00 | 9.00 | 5.7000 | 2.05359 | .255 | -1.223 |
| **IRR** | 30 | 8.95 | 36.33 | 21.8220 | 6.87626 | .135 | -.879 |
| **ARR** | 30 | 5.23 | 34.22 | 17.0813 | 6.98069 | .510 | .113 |
| **NPV** | 30 | 9.00 | 81.00 | 34.3333 | 20.19216 | .786 | -.256 |
| **NPM** | 30 | 11.37 | 31.48 | 19.9237 | 4.94527 | .395 | -.403 |
| **ROI** | 30 | 10.15 | 27.99 | 17.6700 | 5.43449 | .013 | -1.395 |

**Source: Researcher's SPSS v20 computation, 2022**

Table 4.1 shows the summary statistics of the variables under study. The table indicates that, on average during the period of the study Pay Back Period (PBP) of selected quoted Manufacturing firms was approximately 5.7 years with the maximum and minimum return for the period being 9 years and 3 years respectively which indicates that financial performance level during the period was fair. The table also highlights the average, maximum and the minimum percentage of Internal Rate of Return (IRR) at 21.05%, 36.33% and 8.95% respectively. The ARR which represents the Accounting Rate of Return had an average of 17.08% with a maximum and minimum value of 34.22% and 5.23% respectively. Furthermore, the NPV which represents the Net Present Value was shown at an average of N34,000,000 with a maximum and minimum value N81,000,000 and N9,000,000 respectively. Also, NPM which present Net-profit Margin had an average of 19.92%, with a maximum and minimum

value of 31.48% and 11.37% respectively. Finally, the average of 17.67% ROI representing Return on Investment was shown at 17.67% with a maximum value of 27.99% and a minimum value of 10.15%.

The table 4.1 also shows the attributes of the data distribution for each of the variables. The standard deviation values, indicates the dispersion of the data series. The higher the values the higher the deviation of the series from its mean and the lower the value, the lower the deviations from the mean. The variable with the higher degree of dispersion from the mean is the NPV with a value of N20,839,176; this further explains its degree of variation over the years under study.

Also, the table indicates the nature of the variables through their respective skewness and kurtosis values. The variable was shown to be positively skewed and leptokurtic which means that the distribution has a long-right tail and a peaked curves which invariably implies higher values than the mean of 78.6%. The Jarque-Bera ascertains the difference between the kurtosis and the skewness thereby indicating the normality of data distribution. The table indicates that PBP, IRR, NPV, NPM and ROI are normally distributed which is highlighted by their respective probability values which suggest that we fail to reject the null hypothesis of normal distribution at 5% level. However, the opposite is the case for ARR due to their respective probability value being significant at the 5% level which suggest non- normality distribution. Thus, it is evident that the regression model will not be estimated using the Ordinary Least Square due to non-normality of some of the variables under study.

**Table 4.2: Pay Back Period**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| **Dangote** | 10 | 3.00 | 9.00 | 5.4000 | 2.17051 |
| **Flour Mills** | 10 | 3.00 | 9.00 | 6.0000 | 2.26078 |
| **Nestle** | 10 | 3.00 | 9.00 | 5.7000 | 1.88856 |

**Source: Researcher's SPSS v20 computation, 2022**

$$\text{PBP} = \frac{\text{Cash Outflow}}{\text{Average Annual Earnings}}$$

The table above shows the pay back period from the audited financial statement depicting the time required for the cash inflows for capital investment project to equal the cash out flow. When deciding between two or more projects, the usual decision is to accept the one with the shortest payback of the three selected manufacturing firms in Nigeria. The implication of this technique is to show how long it will take for firm to pay back its cost on investment. The firm may have a target payback period, and so it would reject a capital project unless the payback period is less than a certain number of years, perhaps five years, depending on the company policy and this capital budgeting technique is to show how long the cash inflow can pay initial capital invested in a particular project. Dangote Group has pay back period of 3 years as minimum, 9 years as maximum with average of 5.4 years and standard deviation of 2.17 years of the 10 years of observation. Flour Mills of Nigeria has pay back period of 3 years as minimum, 9 years as maximum with average of 6 years and standard deviation of 2.26 years of the 10 years of observation. Nestle Nigeria Plc has pay back period of 3 years as minimum, 9 years

as maximum with average of 5.7 years and standard deviation of 1.89 years of the 10 years of observation

**Table 4.3: Net Present Value**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| **Dangote** | 10 | 9000000.00 | 81000000.00 | 33100000.0000 | 25610110.85056 |
| **Flour Mills** | 10 | 12000000.00 | 97000000.00 | 42100000.0000 | 27726641.82094 |
| **Nestle** | 10 | 19000000.00 | 78000000.00 | 38600000.0000 | 18161008.29310 |

**Source: Researcher's SPSS v20 computation, 2022**

$$NPV = \left[\sum \frac{Cf}{(1+r)^n}\right] - 1$$

The table above depicts the Net present value from the audited financial statement of the selected manufacturing companies showing the value obtained by discounting all cash outflows and inflows of a capital investment project by a chosen target rate of return or cost of capital. The present value of cash inflows minus the present value of cash outflows is the net present value of the three selected manufacturing firms in Nigeria. The implication of this technique is to show conditions for the viability of a project under the net present value; if the net present value is positive, it means that the cash inflows from a capital investment will yield a return in excess of the cost of capital, and so the project should be undertaken if the cost of capital is the firm's target rate of returns.If the net present value is negative, it means that the cash inflows for a capital investment will yield a return less than the cost of capital investment, and so the project should not be undertaken if the cost of capital is the

firm's target rate of returns. If the net present value is exactly zero, the cash inflows from the capital investment will yield a return which is exactly the same as the cost of capital investment, and so if the cost of capital is the firm's target rate of returns, the project will be only at break even level.

Dangote Group has net present value of N9,000,000 as minimum, N81,000,000 as maximum with average of N33,100,000 and standard deviation of N25,610,110 of the 10 years of observation. Flour Mills of Nigeria has net present value of N12,000,000 as minimum, N97,000,000 as maximum with average of N42,100,000 and standard deviation of N27,726,641 of the 10 years of observation. Nestle Nigeria Plc has net present value of N19,000,000 as minimum, N78000000 as maximum with average of N38,600,000 and standard deviation of N18,161,008 of the 10 years of observation.

**Table 4.4: Internal Rate of Return**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| **Dangote** | 10 | 16.28 | 29.32 | 23.7400 | 5.30542 |
| **Flour Mills** | 10 | 12.52 | 29.14 | 19.6620 | 6.11875 |
| **Nestle** | 10 | 8.95 | 36.33 | 22.0640 | 8.79960 |

**Source: Researcher's SPSS v20 computation, 2022**

$$IRR = r_a + \left[\left(\frac{NPV_a}{NPV_a + NPV_b}\right) X\ (r_b - r_a)\right]$$

The table above shows the internal rate of return from the audited financial statement of the selected manufacturing companies depicting the discount rate or the cost of capital that will equate the sum of present values of a project to zero. It is the rate of discount in which discounted cash inflows and outflows of a project are balanced. In other words, internal rate of returns is the maximum rate of interest a firm can afford to pay if a project is financed with borrowed funds and the project cash inflows are to be used to liquidate the loan. It is equally the minimum rate of interest a lender is willing to accept for releasing fund to the borrower. The implication of this technique is to make use of all cash flows associated with the entire life of the project which is considered to be appropriate for performance evaluation under a divisionalized structure of the selected manufacturing companies.

With the 10 years of observation, Dangote Group has internal rate of return of 16.28% as minimum, 29.32% as maximum with average IRR of 23.74% and standard deviation of 5.3%. Flour Mills of Nigeria has internal rate of return of 12.52% as minimum, 29.14% as maximum with average of

19.66% and standard deviation of 6.12% of the 10 years of observation. Nestle Nigeria Plc has internal rate of return of 8.95% as minimum, 36.33% as maximum with average of 22.06% and standard deviation of 8.8% of the 10 years of observation.

**Table 4.5: Accounting Rate of Return**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| **Dangote** | 10 | 10.06 | 20.91 | 14.9520 | 4.30893 |
| **Flour Mills** | 10 | 5.23 | 30.59 | 17.9780 | 8.33947 |
| **Nestle** | 10 | 6.25 | 34.22 | 18.3140 | 7.82853 |

**Source: Researcher's SPSS v20 computation, 2022**

$$ARR = \frac{Estimated\ Average\ Annual\ Earning}{Estimated\ Average\ Capital}\ X\ \frac{100}{1}$$

The table above depicts the accounting rate of return from the audited financial statement of the selected manufacturing companies depicting the percentage rate of return that the project should yield. If the computed value of return on investment exceeds a target rate of return for a single project, it is advisable to undertake the project otherwise the project should be rejected. But where multiple project proposals are being considered, the project proposal with the highest return on investment is the most viable. The implication of this technique is that it considers all the cash flows associated with the entire life of the project.

With the 10 years of observation, Dangote Group has accounting rate of return of 10.06% as minimum, 20.91% of maximum with average ARR of 14.95% and standard deviation of 4.3%. Flour Mills of

Nigeria has accounting rate of return of 5.23% as minimum, 30.59% of maximum with average of 17.98% and standard deviation of 8.34% of the 10 years of observation. Nestle Nigeria Plc has accounting rate of return of 6.25% as minimum, 34.22% of maximum with average of 18.31% and standard deviation of 7.8% of the 10 years of observation.

**Table 4.6: Multiple Correlations**

**Correlations**

| | | ROI | PBP | IRR | ARR | NPV |
|---|---|---|---|---|---|---|
| **ROI** | Pearson Correlation | 1 | .868** | .349 | .478** | .884 |
| | Sig. (2-tailed) | | .000 | .059 | .008 | .009 |
| | N | 30 | 30 | 30 | 30 | 30 |
| **PBP** | Pearson Correlation | .868** | 1 | .406* | .494** | .295 |
| | Sig. (2-tailed) | .000 | | .026 | .006 | .114 |
| | N | 30 | 30 | 30 | 30 | 30 |
| **IRR** | Pearson Correlation | .349 | .406* | 1 | .349 | -.008 |
| | Sig. (2-tailed) | .059 | .026 | | .059 | .966 |
| | N | 30 | 30 | 30 | 30 | 30 |
| **ARR** | Pearson Correlation | .478** | .494** | .349 | 1 | .052 |
| | Sig. (2-tailed) | .008 | .006 | .059 | | .785 |
| | N | 30 | 30 | 30 | 30 | 30 |
| **NPV** | Pearson Correlation | .884 | .295 | -.008 | .052 | 1 |
| | Sig. (2-tailed) | .009 | .114 | .966 | .785 | |
| | N | 30 | 30 | 30 | 30 | 30 |

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation table reports the significant strength of the relationship between the model and the dependent variable. The correlation between ROI and PBP is 86.8% (r=0.868) with p=0.05) at 0.01** significance level (2-tailed), meaning that relationship between a ROI and PBP is significant strong positive linear correlation. The correlation between ROI and IRR is 34.9% (r=0.349) with p=0.05) at 0.01** significance level (2-tailed), meaning that relationship between a ROI and IRR is significant weak positive linear correlation. The correlation between ROI and ARR is 47.8% (r=0.478) with p=0.05) at 0.01** significance level (2-tailed), meaning that relationship between a ROI and ARR is significant weak positive linear correlation. The correlation between ROI and NPV is 88.4% (r=0.884) with p=0.05) at 0.01** significance level (2-tailed), meaning that relationship between a ROI and NPV is significant strong positive linear correlation.

**Table 4.7: Correlations**

| | | NPM | ARR | PBP | IRR | NPV |
|---|---|---|---|---|---|---|
| **NPM** | Pearson Correlation | 1 | .470** | .602** | .479** | .408* |
| | Sig. (2-tailed) | | .009 | .000 | .007 | .025 |
| | N | 30 | 30 | 30 | 30 | 30 |
| **ARR** | Pearson Correlation | .470** | 1 | .254 | -.374* | -.329 |
| | Sig. (2-tailed) | .009 | | .175 | .042 | .076 |
| | N | 30 | 30 | 30 | 30 | 30 |
| **PBP** | Pearson Correlation | .602** | .254 | 1 | -.213 | -.377* |
| | Sig. (2-tailed) | .000 | .175 | | .258 | .040 |
| | N | 30 | 30 | 30 | 30 | 30 |
| **IRR** | Pearson Correlation | .479** | -.374* | -.213 | 1 | .452* |
| | Sig. (2-tailed) | .007 | .042 | .258 | | .012 |
| | N | 30 | 30 | 30 | 30 | 30 |
| **NPV** | Pearson Correlation | .408* | -.329 | -.377* | .452* | 1 |
| | Sig. (2-tailed) | .025 | .076 | .040 | .012 | |
| . | N | 30 | 30 | 30 | 30 | 30 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

**Source: Researcher's SPSS v20 computation, 2022**

The correlation table reports the significant strength of the relationship between the model and the dependent variable. The correlation between NPM and PBP is 60.2% (r=0.602) with p=0.05) at 0.01** significance level (2-tailed), meaning that relationship between a ROI and PBP is significant strong positive linear correlation. The correlation between ROI and IRR is 47.9% (r=0.349) with p=0.05) at 0.01** significance level (2-tailed), meaning that relationship between a ROI and IRR is significant weak positive linear correlation. The correlation between ROI and ARR is 47.0% (r=0.470) with p=0.05) at 0.01** significance level (2-tailed), meaning that relationship between a ROI and ARR is significant weak positive linear correlation. The correlation between ROI and NPV is 40.8% (r=0.408) with p=0.05) at 0.05* significance level (2-tailed), meaning that relationship between a ROI and NPV is significant weak positive linear correlation.

### 4.4 Presentation of Research Questions

In this section the secondarily used techniques of capital budgeting shall be analysed. This will be followed by the research question presentation based on the results obtained from the respondents. The appropriate tables and explanatory charts are placed thereon. Other capital budgeting issues, hypotheses testing and discussion of findings are clearly presented.

#### 4.4.1 Primarily Used Capital Budgeting Techniques

The study revealed that the most favoured capital budgeting technique in the manufacturing industries is the Net Present Value (NPV) technique. The NPV uses the discounting method in arriving at its results. By this, discounting factor is applied on estimated cash inflows and outflows to arrive at the net present values of the series of cash flows over the estimated life span of the project. This essentially takes care of the time value of money, bringing to realization that one Naira today is worth more than one Naira in a year's time. The discounting tries to equate the value of one Naira cash flow

in a future period to what it should be if paid or received today or in year zero. It is an attempt to arrive at the 'real cash flow'. The IRR which is the next most commonly used is based on same fundamental principle of discounting as the NPV. Of a fact the NPV is the fundamental basis for the IRR. The difference is in the use of the trial and error method of arriving at the IRR which expresses the rate of return beneath which a project will not be acceptable. The PBP method ranks almost neck to neck with the IRR showing the popularity of the PBP. While the NPV has a total review of 13(43.3%) the IRR and the PBP respectively have 6 (20%)and 7 (23.3%) The ARR gives a result of 4 (13.3%) of the manufacturing companies. This result is consistent with a prior study which ranks the use of the techniques as net present value being mostly favoured followed by the internal rate of return and the payback period (PBP)[1,2]. The profitability Index and other non statistical approaches which are quite unpopular gave nil responses. Included in this classification are cases like special interests, rule of thumb and management override. These are factors which cannot be ruled out though they may be very insignificant with respect to usage. Table 4.7 in the appendix is clear on this. Figure 4.7 shows the pictorial representation of this analysis in a pie chart. It is also shown in figure 4.8 in a bar chart for ease of comparability with the pie chart report.

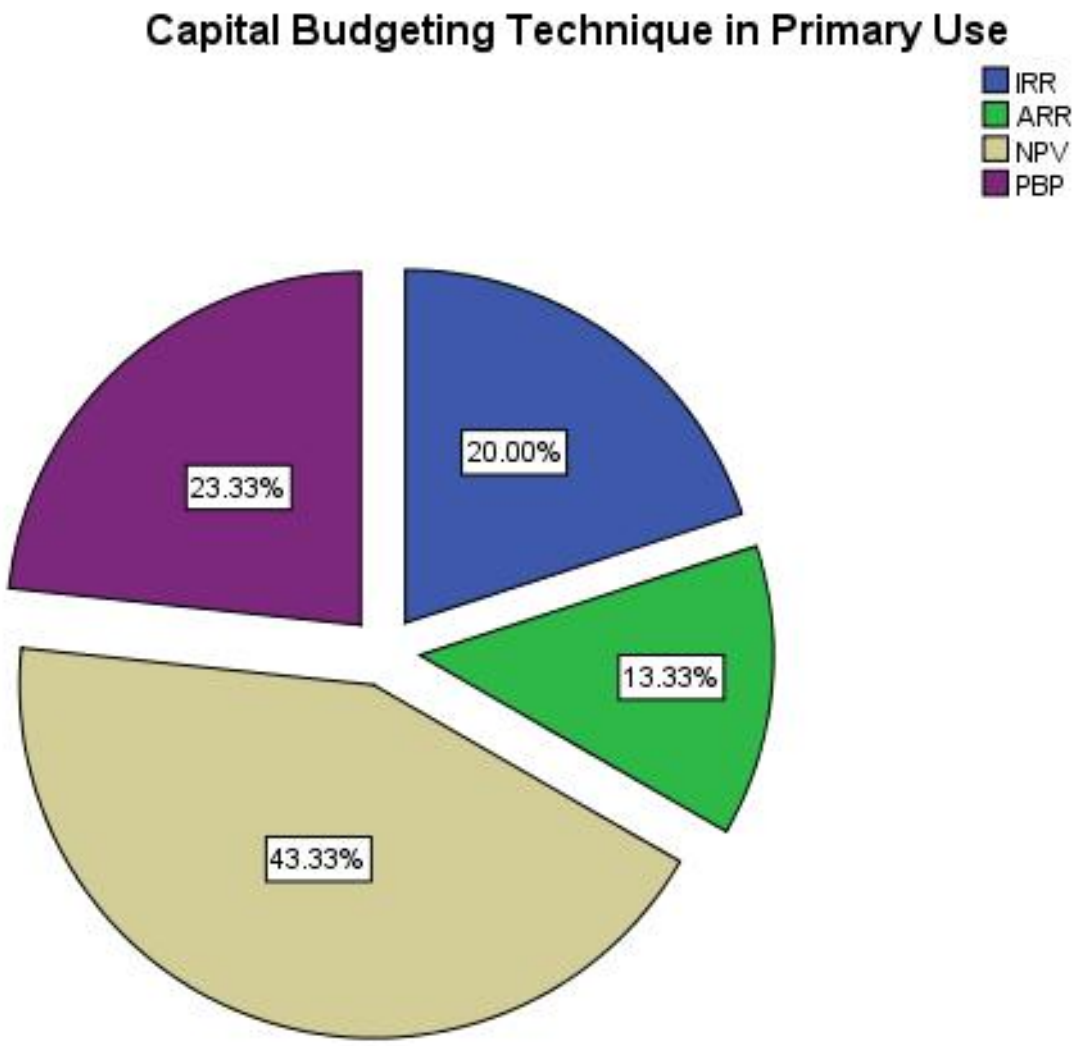


Figure 4.1: Capital Budgeting Technique in Primary Use
Source: Financial Statement Data 2022

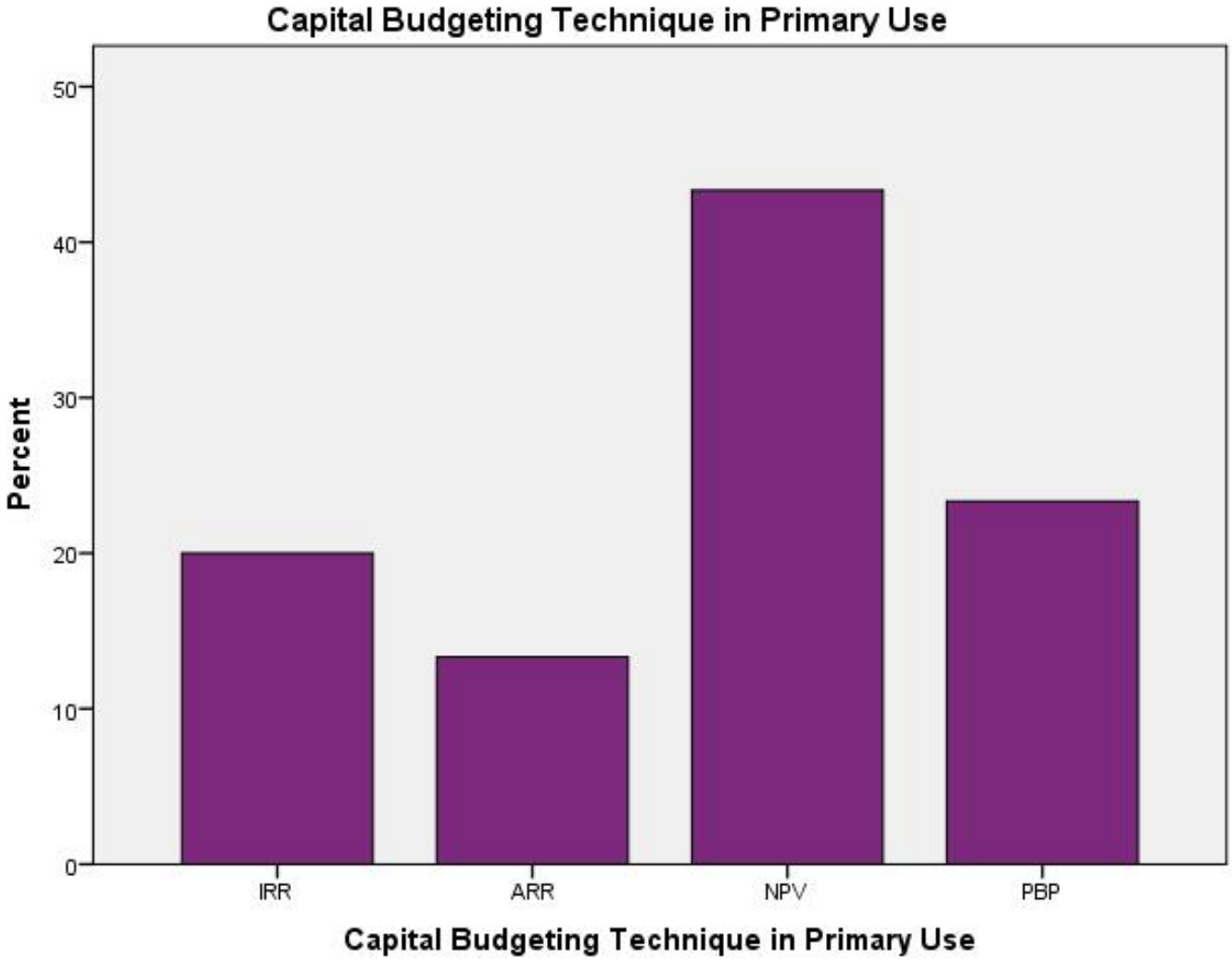


Figure 4.2: Capital Budgeting Technique in Primary Use
Source: Financial Statement Data 2022

### 4.4.2 Measure of Financial Performance

To facilitate the determination of the extent to which reliance can be placed on internal source as regards financial performance selected companies were required to show (in respect of capital budgeting decisions), their understanding of the best measure of financial performance in their organizations. Four key measures were stated viz: profit before interest and taxes (PBIT), return on investment (ROI), earnings per share (EPS) and net profit margin (NPM). The ranking of the result from the financial statement show thus: ROI 17 (56.7%) of financial statement, NPM 7 (23.3%) of financial statement, PBIT 4 (13.33%) of financial statement and EPS 2 (6.67%) of financial statement. This result which places the ROI on top of the other measures shows the extent to which responses received from respondents on the relationship between the CBT and financial performance can be relied upon. Return on investment is a profitability ratio which measures earnings (profit after tax) as a proportion of total assets or investment. It indicates the efficiency with which businesses utilize their assets. There can't be a better measure of financial performance when we talk about capital budgeting since this relates the earnings to the project that generated the earning. Profit before interest and taxes (PBIT) is an absolute measure of performance which is the result of income from all sources less expenses. Net profit margin (NPM) provides a measure of profitability by expressing net profit as a percentage of sales or total revenue. The difference between the NPM and the PBIT is the fact that while PBIT is an absolute figure NPM is a ratio which makes it a proper measure of performance. Earnings per share (EPS) is the ratio which earnings after interest, taxes and preference dividends bear to the number of ordinary shares. It is a measure of what is due to owners. Professionals from the companies of study did not mince words about the superiority of the ROI as a KPI in manufacturing companies.

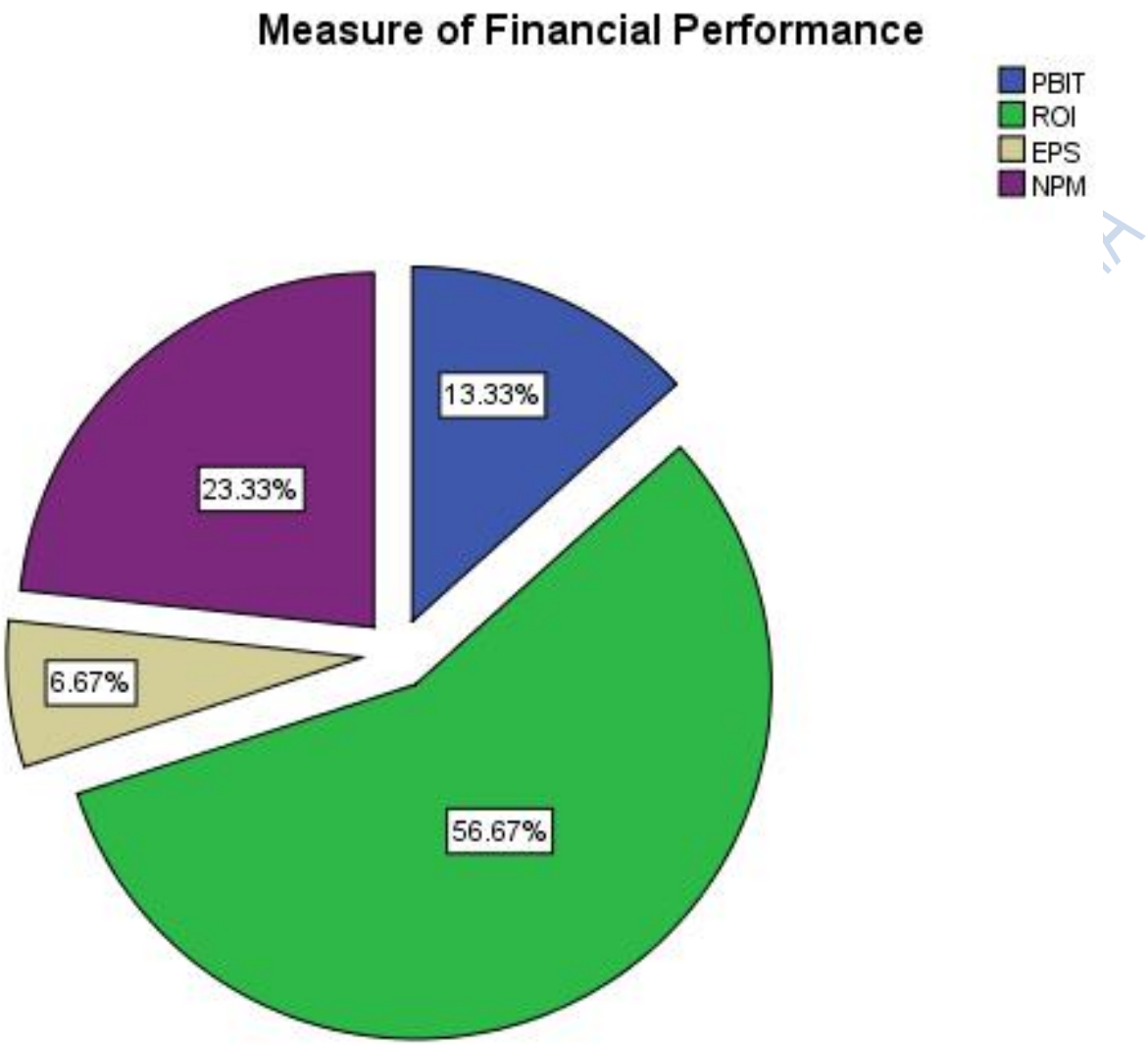


Figure 4.3: Measure of Financial Performance
Source: Financial Statement Data 2022

### 4.4.3 Measuring Whether a Change of Technique Changes Financial Performance

This analysis is very important in view of the series of conflicting reports seen from literature reviews about the impact of capital budgeting techniques on financial performance of organizations. If measurement is by reference to same performance indicators there should be no outrageous differences

as we have today. If a change in a variable or factor deemed to affect profitability or financial performance takes place, of necessity the dependent variable, in this case profitability must change. The analysis from our study shows thus: 7% of the financial statement indicated that a change in capital budgeting techniques affects financial performance. 5% indicated that a change in capital budgeting techniques will cause financial performance to change. This indicates that we have a total of 12% in support of a change in technique affecting financial performance. 11% of the financial statement indicated while 73% strongly indicated giving a total of 84% indicating that a change in capital budgeting technique does not cause a change in financial performance. We have only 4% on the undecided side. If this is the case we must check how researchers and practitioners had come to the conclusions that strong relationships exist between the various CBT techniques and financial performance. The difference is in the measure of direct impact (which has a cause and effect relationship) and indirect impact. The above analysis shown in the following table is a case of measurement of direct impact.

Price of goods has a cause and effect relationship with profitability and as such there is a direct relationship. Net present value has impact on profitability to the extent that it enables a 'fundamentally profitable' project to be chosen. Any other method could also have chosen a fundamentally profitable project and the financial result will remain the same except there are changes in fundamental circumstances of the project (not a change in the technique). However if there is a change to a method that says 'no' to a fundamentally profitable project financial performance will be affected adversely. The relationship between CBTs and financial performance is therefore an indirect relationship.

### 4.5 Testing of Research Questions

This study is to determine the effect of the various capital budgeting techniques on the financial performance of manufacturing companies in Nigeria. It is to determine whether the capital budgeting techniques have significant effects on the financial performance of manufacturing companies in Nigeria. The use of secondary data, percentages and mean characterized the above discussions hitherto. The use of pie charts as well as bar charts complement the results obtained from the tables. The following research questions were adopted to enable us arrive at conclusions which validated the relationships between the CBTs and financial performance of the manufacturing companies:

a) What is the effect of net present value technique of capital budgeting on financial performance?

b) What is the effect of accounting rate of return technique of capital budgeting on financial performance?

c) What is the effect of payback technique of capital budgeting on financial performance?

d) What is the effect of internal rate of return technique of capital budgeting on financial performance of manufacturing organizations in Nigeria?

In addition to the analysis above on tables 4.2, 4.3, 4.4, 4.5 which are derived from the secondary data, the financials of the three companies of study, which shows clearly that the research objectives were achieved and research questions answered, the statistical analysis following, confirms, doubly, that the research questions are answered. They confirm too that the aims and objectives of study, which follow from the research questions, are achieved.

**Table 4.8: Regression Statistics / Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .750[a] | .562 | .492 | .64118 |

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

**Source: Researcher's SPSS v20 computation, 2022**

From the model the coefficient of correlation, R is 0.750 indicating a strong linear relationship between the input and output variables. The coefficient of determination, $R^2$ determining the appropriateness of the model is 0.562 meaning that 0.562 of the variation in financial performance (the dependent variable) is explained by the input / independent variables, NPV, ARR, PBP and IRR. The standard error which is a measure of precision of predictions is 0.64118.

**Table 4.9: Regression Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.630 | .929 | | 1.753 | .032 |
| | NPV | .400 | .188 | .368 | 2.132 | .043 |
| | IRR | .274 | .191 | .250 | 1.439 | .163 |
| | ARR | .051 | .137 | .058 | .373 | .712 |
| | PBP | -.276 | .134 | -.308 | -2.060 | .050 |

a. Dependent Variable: ROI

**Source: Researcher's SPSS v20 computation, 2022**

The table above shows the multiple linear regression coefficient estimates including the intercept and the significance levels. The coefficient table above shows the simple model that PBP, IRR, ARR, and

NPV have significant impact on financial performance of selected manufacturing companies. Of all the capital budget techniques, net present value with the p-value of 0.043 is statistically significant to financial performance less 5% level.

A series of multiple linear regression models were run in order to isolate some of the factors which could explain the financial performance between PBP, IRR, ARR, and NPV. The aim was to distinguish the significant effects of capital budget techniques from other confounding variables. These variables were grouped into the following categories: PBP, IRR, ARR, and NPV. The analysis conducted in this research has stipulated that NPV has the greatest significant effect on financial performance in selected manufacturing companies.

The model is shown mathematically as follows;

$Y = \beta_0 + \beta_1.X_{i2} + \beta_2.X_{i2} + \beta_3.X_{i2} + \beta_4.X_{i2}$ Where "y" is financial performance and "$\beta_1$" is NPV, "$\beta_2$" is IRR, "$\beta_3$" isARR, $\beta_4$ is PBP "$\beta_0$" is a constant factor and $X_{i2}$is the value of coefficient. From this table therefore,

$$\boldsymbol{Financial\ Performance} = \mathbf{1.630} + \mathbf{0.400}\boldsymbol{NPV} + \mathbf{0.274}\boldsymbol{IRR} + \mathbf{0.051}\,\boldsymbol{ARR} - \mathbf{0.276}\boldsymbol{PBP}$$

From the above equation: When the values of independent variable are held at zero, ROI is 1.630; a percentage increase in NPV grows ROI by 40%; a percentage increase in IRR grows ROI by 27.41%; a percentage increase in ARR grows ROI by 5.1% while a percentage increase in PBP reduces ROI by 27.6%. This shows the impact of the independent variables on the dependent variable, ROI.

### 4.6 Chi square result vs. Correlation Coefficient's

| | Chi Square | Pearson Correlation |
|---|---|---|
| NPV | Association exists | Strong relationship exists |
| ARR | Association exists | Significant Relationship exists |
| PBP | Association exists | Strong Relationship exists |
| IRR | Association exists | Significant relationship exists |

The difference in the result of the chi square and the correlation for ARR is not a reason for worry in the sense that the two models are not ordinarily targeted to measure same thing. While chi square measures association between variables correlation measures relationship between variables. In the measurement of association, variables depend on one another but strength and direction are unknown but in the measurement of relationship, cause, effect and strength of relationship are determined. For concluding on the strength of relationship, for the purpose of this study reliance will be placed on the correlation model.

### 4.7 Qualitative Aspect of the Study

References were made to professionals in the companies of study as well as to finance and accounting practitioners for a discussion on this key finance topic. On the use of CBTs for determining the viability or otherwise of capital projects the responses were in the affirmative. The professionals indicated that there is no room for guess work or the use of the rule of thumb on the issue of capital budgeting in view of the risk and the amount of money necessarily involved. Some indicated that the fiduciary responsibility placed on organizational executives will not allow them to invest without

observing this due process. The fact that there is no room for guess works and management override on the issue of investing in capital projects was clearly stated. The discussions show also that relationships exist between the CBTs and financial performance of organizations. One asked why would companies go through the troubles of appraising capital projects using these methods if there are no relationships. However they placed a caution that the relationships are not causal as do such variables as price of products, share of the market. Other issues confirmed include the existence of the use of committees for capital investment appraisal, the fact that usage of particular methods depends on organizations involved, the fact that some companies use more than one method depending on the amount involved and possible risk. Organizations that use more than one method also do so to confirm the result obtained from the use of the primary methods or techniques.

**4.7 Discussion of Findings**

This research was conducted to investigate the relationship between the capital budgeting techniques (NPV, ARR, PBP, IRR) and the financial performance, measured by ROI, of selected manufacturing firms in Lagos State, Nigeria. It is determined to establish the relationship between the variables. To achieve this key objective extensive review was done of existing literature on this subject matter. It revealed clearly that manufacturing firms use CBTs for appraising capital projects to ensure organizational objectives are met.

Demographic survey shows that 89% of the respondents are highly literate, having the first degree and above. Respondents' length of service of over five years is over 80%. These two factors tend to confirm the quality of human resources / respondents and understanding of their firms.

This research work revealed that positive relationship exists between the NPV, PBP, IRR, ARR and financial performance measured by ROI.

In measuring causal relationship between the variables professionals in the manufacturing industry as well as in the finance industry disagreed that capital budgeting techniques cause financial performance, differentiating between causal effect and correlation. Correlations may exist, relationships may exist which are not causal.

This study also revealed that the mostly used techniques are the NPV, IRR, PBP and ARR in that order. Secondarily or alternatively used techniques are the IRR, NPV, PBP and the ARR also in that order.

Discussions with professionals also reveals that key factors for choice of capital budgeting techniques (CBTs) include size and cost of project, organizational policy and effect on financial performance. Other factors exist too.

Studies about the companies of study confirmed that circumstances for the use of capital budgeting techniques include replacement of capital machines, new production lines and taking the advantage of technology and other factors such as mergers and acquisitions. Others include establishment of new branches and plants and acquisition.

Key performance indicators for measuring financial performance in manufacturing industries include return on investment which is widely acknowledged to be in the forefront. Other main measure following the ROI is the net present margin (NPM). The profit after interest and taxes and the earnings per share accounted have minima considerations.

Using the regression model to analyse relationships the results are significant with R of 0.750 indicating existence of high level of relationship and $R^2$ of 0.562 confirming that 56.2% of the variation in the dependant variable (ROI) is accounted for by the independent variable, NPV, ARR, PBP and IRR.

## Endnotes

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# Chapter Five

# Conclusion

## 5.1 Summary of Findings

The chapter concludes the study by dealing with summary of findings, conclusions and recommendations on capital budgeting techniques and financial performance in manufacturing companies in Nigeria. The study was aimed at determining the relationship between capital budgeting techniques on financial performance of manufacturing companies in Nigeria. It is to determine the effect of the capital budgeting techniques on financial performance of manufacturing companies in Nigeria. From the analysis of the secondary data from the three companies of study, the result of the study showed that capital budgeting techniques are vital in the capital budgeting and investment decision making in manufacturing companies. This is in agreement with earlier studies indicating that capital budgeting is vital in organizational decisions[1].The results answer the key questions of the study by showing that all the four techniques put to statistical test have positive and significant effects on financial performance of manufacturing companies in Nigeria. The net present value (NPV) technique has a significant strong positive effect on the financial performance of manufacturing companies in Nigeria. The Payback period (PBP) method also toes the line of the NPV while the internal rate of returns and the accounting rate of return have significant and positive effects on financial performance of manufacturing companies in Nigeria. Payback period (PBP) method which is a non discounting method has a significant place on financial performance of manufacturing companies in Nigeria. Individually the number of companies making use of the PBP method is not many but as far as correlation with financial performance is concerned, it is very significant. The fact that a method is not in use does not mean that it is not known to be of effect on financial performance. Both the discounted

cash flow techniques and the non discounted cash flow techniques have shown to be of significant effect on financial performance of manufacturing companies in Nigeria.

As regard the extent of use of capital budgeting techniques two major classes of techniques exist which are the discounted cash flow techniques and the non discounted cash flow techniques. This position agrees with earlier studies and confirms there is no discrepancy thereupon[2]. This study confirmed the use of the capital budgeting techniques in the following order: the net present value technique, the internal rate of return, the payback period technique and of course the accounting rate of return. The NPV and the IRR fall within the DCF class while the PBP and the ARR fall within the non DCF class[2]. This study revealed that the most favoured capital budgeting techniques (the NPV and IRR) use the discounting method in arriving at its results thus agreeing with earlier one that these methods are in most regular use by organizations[3,4]. Discounting factor is applied on estimated cash inflows and outflows to arrive at the net present values of the series of cash flows over the estimated life span of the project. This takes care of the time value of money, showing that the real value of one Naira received in a later year is less than one Naira today or in year zero. The IRR which is the next most commonly used is based on same fundamental principle of discounting as the NPV. The NPV is the fundamental basis for the IRR. The PBP method ranks close to the IRR in usage.

Our study confirms that payback period suffer a setback in its choice in the manufacturing sector for a key reason that the benefits of the investment in manufacturing environment may not be heavily realised in the first few years but in later years whereas payback period emphasizes on recovering in earlier years of investment.

Management override comes out clearly as the least considered in the choice of a capital budgeting technique. There is an almost nil report from this study 'that the rule of thumb and management

override' has a place in capital budgeting decision making in the manufacturing industry. The finding of this study that the rule of the thumb is of no significance in the choice of capital budgeting technique agrees with a recent study[5].This emphasizes the extent to which management of the manufacturing companies such as the researcher's companies of study avoids interference with procedures and processes as far as capital budgeting decisions are considered. It also confirms the extent to which the organization appreciates the enormity of cost incurred on capital investments. A mistake in an investment decision in the lifetime of a company may be the undoing of such company. Discussion with a manager in one of the manufacturing companies revealed that the companies are so well structured that such practices as management override cannot work. The manager stated that the executive management of the organizations would not want to fail in their fiduciary role to manage the funds entrusted to their care profitably. Whether the funds are borrowed funds or equity funds the management is under obligation to use funds wisely and profitably too. This position is at variance with the real option theory which indicates that management or fund owners reverse investment decisions or channel their funds wherever they will.

Most manufacturing organizations have capital budgeting committees who do the capital budgeting evaluation or investment appraisal. These forward their recommendations to the executive management for consideration and / approval. The committee, depending on its findings, may recommend a reject or approval of a project. The process may however be triggered by such departments as the finance department, the production and marketing departments.

The study reveals that key issues exist which have direct 'cause effect' on financial performances of manufacturing companies when such issues are altered. These are matters which have direct impact on financial performance. Closure of a profitable plant either temporarily or permanently will cause a reduction in the financial performance of the organization. A shrink in the market share of an

organization will also do. Reduction in product value / price will reduce financial performance. A reduction in market share and of course productivity (yield) will cause a direct reduction in financial performance of a manufacturing organization. This study reveals that there are factors with direct impact (which are the above) while there are those with indirect effects such as the CBTs. Techniques of capital budgeting though have effect on financial performance, altering the use of a method may not cause an alteration in financial performance. The use of IRR instead of NPV may not cause a difference in the result obtained from the project. Capital budgeting techniques enable fundamentally profitable projects to be chosen; this is the extent of the relationship. Professionals strongly disagreed that a change in the use of CBT affects financial performance / profitability. However a shift from a discounted cash flow technique such as NPV to PBP may cause a potentially profitable project to be rejected merely because inflows are not heavy in the earlier years of the project.

Replacement of existing production machines and investment in new production lines showed from the study to be the top factors or circumstances for the use of CBTs. This is due to the fact that these activities in the life of companies come up oftener than such circumstances as new branches and acquisition and mergers. Taking technology advantage takes a prime place too in view of technological growth in business world today. In view of the impending technological development around the industrial sector the issue of technology may be in the forefront in the near future.

The study revealed that the return on investment (ROI) and the net profit margin (NPM) are key measures of financial performance in manufacturing companies. The ROI is significant as it relates earnings to the investment that produces it. The ROI falls within the modal category.

Conclusions reached by some researchers concerning capital budgeting practices years ago indicated that the discounted cash flow techniques are less popular with the companies[6]. These place emphasis

on the use of the payback period technique[3,7]. This is contrary to wider position that the net present value is preferred. The factor for this may not be unconnected with the level of complication relatively / necessarily involved in the calculation and interpretation of the results given by these methods then. These were the days of analogue calculators whereby, even to arrive at the discounting factor was onerous, a result to obtain these days by a mere touch of the screen on our computers. The level of the users then, technology-wise, was shallow. The position is changing, courtesy of the reversal of the factors mentioned above. The computer era is a laudable factor whereby the computer becomes the ready pen of any manager in the workplace these days. The advancement in technology, the fourth industrial revolution is seeing an exponential increase in industrial process efficiencies. At this point parameters and circumstances of a project might be keyed in and all the results and interpretations produced without human intervention. The preference of users and the workplace manager for the use of the more sophisticated DCF methods is noticeable in this era of technology. The IRR sounds like a relative measure of expected performance of a project based fundamentally on same basic principle of discounting as the NPV, while the NPV technique is an absolute measure of expected performance. Studies in this key area of financial management cannot be too many. To ensure resolution of the conflict in position of researchers on this topic of study further study is a necessity.

In continuation of the conflict arising concerning the use of capital budgeting techniques a recent study placed emphasis on the use of the internal rate of return (IRR)[8]. This conflicts with the position above which does not include the internal rate of return in its ranking. It is difficult to ascertain whether the differences are traceable to geography as studies within same geographical enclaves also report differing results. The effect of geography on this topic is a veritable area for future research.

## 5.2Conclusion

The study was conducted to establish a relationship between capital budgeting techniques and financial performance of manufacturing companies in Nigeria. The result of the study showed that capital budgeting techniques are vital in the capital budgeting and investment decisions in manufacturing organizations. The results answer the questions of this study by showing that the net present value (NPV), payback period (PBP), accounting rate of return (ARR) and internal rate of return (IRR) techniques have significant effects on the financial performance of the firms. It confirms too that above 56% of changes in financial performance is accounted for by changes in the independent variables. This positions accord with earlier studies on this topic[9].

The study enabled us to know the perception of professionals on this important area of financial management. It enabled us to know that structured manufacturing companies such as the ones under study have policies in place concerning capital budgeting decisions; they adhere to the policies which guide evaluation of capital investments; circumstances exist which determine use of CBTs. By this study we ably discover that a change in a CBT to another may not lead to a change in profitability or financial performance.

## 5.3 Recommendations

Having realized that the capital budgeting techniques have positive effects on financial performance of manufacturing companies the study submits the following recommendations:

1. Further study to enable the accounting rate of return (ARR) to be adjustable for depreciation and other non cash flow transactions. This will translate the ARR from accounting profit expressed as a ratio of total assets to a 'cash flow profit' expressed as a ratio of total assets or

investment. This adjusted ARR will then be expressed as a ratio of total assets or investment. This will shore-up the importance attached to ARR technique as a capital budgeting technique. It is such an age-long financially popular ratio that it should not be rubbished on the platform of capital budgeting decisions where it should be in the forefront.

2. To enhance uniformity in practice, standard setting authorities should consider coming up with a standard on this important aspect of finance. Determining the CBTs to use on industry lines should be considered.
3. Listed companies such as the companies of study and companies that have existed for long use the CBTs because they derive maximum benefits there from. Younger and other companies are advised to make use of the CBTs in their investment decisions.
4. Companies of study here are in the forefront in manufacturing by reference to size, future research should consider the influence of firm's size and smaller firms in capital budgeting practices[10, 11]. This will enable a conclusion on the effect of company's size on the choice of capital budgeting techniques.
5. Level of staff education has an effect on the use of CBTs. This confirms need for companies to invest more in human capital as it enables them to take advantage of seemingly complex but highly profitable opportunities. A recent study recommended specific training for managers and analysts in capital budgeting practices[12].

### 5.4 Contribution to Knowledge

This study has enabled the realization that the independent variables (the CBTs) have positive effects on the dependent variable (financial performance of manufacturing organizations) but they do not cause the financial performance in direct manner. This is saying that an independent variable (CBTs), as in this study, may not be the direct cause of an organization's financial performance (the dependent

variable). Though a relationship exists between the independent and dependent variables, it is not a direct relationship. When an independent variable has a direct and 'causal relationship' with the dependent variable a change of the independent variable, of necessity, results in a change in the dependent variable. If such is the case in this study, change in the use of CBTs should ordinarily cause a change in the financial performance or profitability of organizations concerned. This study revealed that this is not so. A change in the use of CBT from one that recommends acceptance of a project to another technique that also recommends acceptance of the same project does not affect the financial performance of the organization. If an organization uses the NPV primarily and chooses to use IRR for the evaluation of a specific project and both NPV and IRR recommends acceptance of the project there will be no change in the organization's financial result. The CBTs are not amongst the fundamental factors of profitability / financial performance of manufacturing companies. However where use is made of an alternative technique which rejects a 'fundamentally profitable' project, the organization may suffer a huge loss as a result of rejecting an otherwise profitable project. To this extent a significant relationship is established between the CBTs and the financial performance of manufacturing companies. Where a manufacturing company changes from the use of a DCF technique which makes use of all cash flows in the lifetime of a project to a non-DCF technique (e.g. PBP) which ignores cash flows after the recovery of investment cost, a ruinous loss may result. The latter (PBP) rejects the project irrespective of the profitable and significant inflows after the earlier years of recovery of investment cost.

Fundamentally profitable projects include those that are well valued / priced, those for which an organization has a wide share of the market, those for which production lines are many and profitable, those for which production efficiency level (yield) is high and those for which the variable costs are very minimal. These are the key factors that directly determine financial performance and profitability.

This study reveals that there are projects which are fundamentally profitable.

It also showed a distinction between direct relationship and indirect relationships between capital budgeting techniques and financial performance.

This study reveals that management override and rule of thumb plays very insignificant role in the choice of capital budgeting techniques used in evaluating capital projects. It reveals that due regard is given to management policies on project evaluation processes of which the choice of technique is key.

This study will enable future researchers to confirm that there is a strong relationship between the four key capital budgeting techniques (DCF and non-DCF techniques) and financial performance of manufacturing companies in Nigeria. The techniques are the NPV, IRR, PBP and the ARR.

This study will provide a basis of reference for future researchers not only on the relationship between capital budgeting techniques and financial performance of organizations but also on the practices of capital budgeting. It will be a point of reference for future researchers[13].

**5.5 Suggested Areas for Further Research**

This study is with reference to the manufacturing sector. It is difficult to generalize across all industries, hence further study on this topic should cover non manufacturing environment, both service industries and non service industries. The need to synchronize the results / findings of all these studies cannot be overemphasized.

Further research is recommended on the extent to which capital budgeting techniques affect financial performance using performance indicator(s) other than the return on investment for analysis.

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## Appendices

## Appendix I

### Tables of Analysis from Secondary Data

**Pay Back Period**

| | Dangote | Flour Mills | Nestle |
|---|---|---|---|
| 2011 | 4 | 3 | 4 |
| 2012 | 5 | 9 | 6 |
| 2013 | 7 | 7 | 8 |
| 2014 | 3 | 9 | 6 |
| 2015 | 8 | 3 | 4 |
| 2016 | 4 | 5 | 3 |
| 2017 | 9 | 6 | 5 |
| 2018 | 4 | 8 | 9 |
| 2019 | 3 | 6 | 7 |
| 2020 | 7 | 4 | 5 |

**Net Profit Margin**

| | Dangote | Flour Mills | Nestle |
|---|---|---|---|
| 2011 | 15.78 | 20.69 | 25.21 |
| 2012 | 18.42 | 15.43 | 26.88 |
| 2013 | 19.61 | 23.15 | 19.66 |
| 2014 | 12.6 | 23.33 | 20.18 |
| 2015 | 15.86 | 18.94 | 12.87 |
| 2016 | 11.37 | 15.36 | 31.48 |
| 2017 | 16.32 | 17.23 | 24.91 |
| 2018 | 26.7 | 27.65 | 20.12 |
| 2019 | 21.69 | 20.87 | 15.59 |
| 2020 | 17.52 | 25.6 | 16.69 |

**Return on Investment**

| | Dangote | Flour Mills | Nestle |
|---|---|---|---|
| 2011 | 10.53 | 21.63 | 25.87 |
| 2012 | 10.87 | 21.67 | 24.38 |
| 2013 | 16.8 | 22.41 | 21.55 |
| 2014 | 12.63 | 22.61 | 10.51 |
| 2015 | 10.92 | 12.1 | 12.47 |
| 2016 | 10.15 | 18.58 | 27.99 |
| 2017 | 20.57 | 15.92 | 12.12 |
| 2018 | 22.84 | 22.57 | 22.28 |
| 2019 | 20.22 | 21.83 | 15.48 |
| 2020 | 11.71 | 12.27 | 18.62 |

**Net Present Value**

| YEARS | Dangote | Flour Mills | Nestle |
|---|---|---|---|
| 2011 | 9,000,000 | 38,000,000 | 22,000,000 |
| 2012 | 14,000,000 | 44,000,000 | 27,000,000 |
| 2013 | 28,000,000 | 61,000,000 | 34,000,000 |
| 2014 | 44,000,000 | 71,000,000 | 19,000,000 |
| 2015 | 81,000,000 | 97,000,000 | 27,000,000 |
| 2016 | 14,000,000 | 12,000,000 | 53,000,000 |
| 2017 | 28,000,000 | 16,000,000 | 54,000,000 |
| 2018 | 13,000,000 | 28,000,000 | 34,000,000 |
| 2019 | 74,000,000 | 42,000,000 | 78,000,000 |
| 2020 | 26,000,000 | 12,000,000 | 38,000,000 |

**Accounting Rate of Return**

| | Dangote | Flour Mills | Nestle |
|---|---|---|---|
| 2011 | 12.45 | 5.23 | 24.20 |
| 2012 | 11.74 | 30.59 | 15.90 |
| 2013 | 10.32 | 28.57 | 34.22 |
| 2014 | 10.06 | 8.66 | 6.25 |
| 2015 | 11.07 | 9.98 | 10.46 |
| 2016 | 15.41 | 20.27 | 23.00 |
| 2017 | 19.16 | 18.00 | 18.06 |
| 2018 | 20.91 | 23.39 | 15.05 |
| 2019 | 18.67 | 15.75 | 21.00 |
| 2020 | 19.73 | 19.34 | 15.00 |

**Internal Rate of Return**

| | Dangote | Flour Mills | Nestle |
|---|---|---|---|
| 2011 | 28.78 | 15.32 | 19.87 |
| 2012 | 16.28 | 13.71 | 36.33 |
| 2013 | 25.83 | 12.52 | 14.96 |
| 2014 | 27.10 | 28.43 | 28.99 |
| 2015 | 17.11 | 22.75 | 25.76 |
| 2016 | 18.98 | 20.33 | 14.32 |
| 2017 | 27.30 | 23.06 | 16.52 |
| 2018 | 29.32 | 29.14 | 32.73 |
| 2019 | 18.56 | 18.10 | 8.95 |
| 2020 | 28.14 | 13.26 | 22.21 |

**Capital Budgeting Technique in Primary Use**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| IRR | 6 | 20.0 | 20.0 | 20.0 |
| ARR | 4 | 13.3 | 13.3 | 33.3 |
| NPV | 13 | 43.3 | 43.3 | 76.7 |
| PBP | 7 | 23.3 | 23.3 | 100.0 |
| Total | 30 | 100.0 | 100.0 | |

**Measure of Financial Performance**

| Factor definition | Freq | % | Ranking |
|---|---|---|---|
| Profit Before Interest and Taxes : PBIT | 2 | 6.7 | 3rd |
| Return on Investment : ROI | 19 | 63.3 | 1st |
| Earnings per Share : EPS | 1 | 3.33 | 4th |
| Net Profit Margin : NPM | 8 | 26.7 | 2nd |
| | 30 | 100 | |

**Appraising Factors Determining the Choice of CBTs**

| Factor | Total | Mean | Ranking |
|---|---|---|---|
| Past performances (extent of conformity to projections) | 199 | 3.55 | 5th |
| Management override or Rule of Thumb | 84 | 1.50 | 9th |
| Peer and Industry Practices and Comparison | 150 | 2.68 | 8th |
| Size and Cost of Project | 255 | 4.55 | 1st |
| Understandability and Ease of Use | 206 | 3.68 | 4th |
| Extent of Effect on Financial Performance | 219 | 3.91 | 3rd |
| Prevalent Technical Practices and Technology | 156 | 2.79 | 7th |
| Level of Education of Management | 191 | 3.41 | 6th |
| Organizational policy | 244 | 4.36 | 2nd |

Circumstances for Use of CBTs

| | Freq | % | Ranking |
|---|---|---|---|
| New Product Line decision | 7 | 23.3 | 2nd |
| New Branches and Plants | 2 | 6.7 | 4th |
| Replacement of Capital Machines | 14 | 46.7 | 1st |
| Acquisition and Merger of Companies | 2 | 6.7 | 5th |
| Taking technology Advantage | 5 | 16.7 | 3rd |
| | 30 | 100 | |

**Biodata**

OluwoleBabalola
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**Career Objective**

To strive for excellence, add value and make positive impact on people and organizations

**Educational Institutions Attended and Qualifications**

| | | |
|---|---|---|
| 2020 – Date | Lead City University | MSc (in view) |
| 1997 – 1999: | Delta State University Abraka | MBA Mgt |
| 1979 – 1983: | The Polytechnic Owo | HND Accountancy (Distinction) |
| 1974 – 1978: | Amoye Grammar School IkereEkiti | WASC (Division 1) |
| 1966 – 1971: | St Paul's Pry School IgbaraOdoEkiti | Pry Schl Leaving Cert |

**Professional Qualifications**

1988: Qualified as a Chartered Accountant

1999: FCA

2001: Associate Chartered Institute of Taxation
2011: Associate Chartered Institute of Bankers of Nigeria

**Prizes**

1983: Rector's Best Graduate Prize
Best Graduate in Accountancy Department
Departmental prizes in various subjects

**Personal Information**

| | |
|---|---|
| Sex: | Male |
| Marital Status | Married |
| Date of Birth: | 9th August, 1960 |
| State of Origin: | Ekiti |
| Nationality: | Nigerian |

**Work Experience and Last Positions Held**

2014 – Date Oluwole Babalola & Co Chartered Accountants Snr Partner
2010 – 2014: Union Pension Custodian Ltd Head Risk & Compliance

2006 – 2010: Union Bank of NigPlcSenior Manager

2001 – 2005: Universal Trust Bank Plc Senior Manager

2001: 2001 NationalBank Manager

1991 – 2000: Oceanic Bank IntlPlc Manager

1987 – 1991: KPMG Audit Audit Supervisor

1984 – 1987: The Polytechnic Owo Lecturer

**Work Coverage**

Internal Audit, Risk Management and Compliance
Financial Control / Management Reporting
Credit and Marketing
Banking Operations
Branch Management
Audit of corporate accounts
Lecturing

**Values**

- Integrity
- Contentment
- Resilience
- Accountability

**Skills and Abilities**

- Leadership
- Communication
- Excellent numerical and analytical skill
- Ability to recognize challenges, opportunities and take appropriate Decisions

**University Compliance Certificate**

This is to certify that this thesis written by **Peter Oluwole BABALOLA**: with Matric No: **LCU/PG/001409** in the Department of Management and Accounting, Faculty of Management and Social Sciences, Lead City University, Ibadan is in compliance with the approved University format and style.

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Signature and Name Date