A CRITICAL ANALYSIS OF CRITICAL INVESTMENT DECISIONS BY MANUFACTURING COMPANIES IN NIGERIA: A CASE STUDY 0F UNITED TEXTILES NIGERIA LIMITED (UNTX) K A D U N A

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D E D I C A T I O N

This dissertation is dedicated to Dr. OLADIPO J. FOLORUNSO; who made many sacrifices so that I may get this degree.

D E C L A R A T I O N

I hereby declare that this disseration has been written by me and it is a record of my own research work. To the best of my knowledge, it has not been produced previously for a higher degree.

All quotations are distinguished by quotation marks and the sources of information are specifically acknowledged by means of references.

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C E R T I F I C A T I O N

This Project entitled "A CRITICAL ANALYSIS OF CAPITAL INVESTMENT DECISIONS BY MANUFACTURING COMPANIES IN NIGERIA:- A Case Study of United Textiles Nigeria Limited (UNTL) Kaduna," By OYIDI OLUSHOLA JAYNE, meets the regulations governing the award of the degree of MASTER OF BUSINESS ADMINISTRATION of AHMADU BELLO UNIVERSITY, and is approved for its contribution to knowledge and literary presentation.

A.M. Abu-Abdissamad — 10/2/1993

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APPROVAL SHEET

This project has been read and approved as having fulfilled the partial requirements for the award of the degree of Master of Business Administration (MBA) of the Ahmadu Bello University, Zaria.

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A C K N O W L E D G E M E N T

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ABSTRACT

This Study presents the empirical research findings relating to the practice of Capital Investment Decisions by Manufacturing Companies in Nigeria with special focus on United Nigeria Textile limited, Kaduna.

This study begins with the general introduction in Chapter One stating the basic objective of the investigation and critically examines the practice of capital investment decisions by Nigerian This Manufacturing Companieso It also intends to identify and probe into questions such as, how capital investment proposals are generated and progressed and the techniques used in the evaluation and risk analysis of capital investment proposals This enables opinions to be formed about the hypotheses of the study whether or not majority of Nigerian Manufacturing Companies:-

(a) Encourage origination of capital investment proposal ideas from every level of personnel and several other sourceso

(b) Use modern sophisticated techniques in the evaluation and risk analysis of capital investment proposals.

This study therefore aimed at

(1) Considering the theoritical foundations for a sound economic approach to capital investment decisions, and

(2) The capital investment decisions of United Nigeria Textile Limited in order to ascertain whether, their capital investment decisions conform reasonably with the theoritical standards as can be expected in an ideal situation.

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CHAPTER ONE

1.1 I N T R O D U C T I O N.

> "The earliest reference to Capital Investment is as long as history. The Developments since the Second World War would have stimulated the search for criteria or systematic deicision rules, for project appraisal. Rapid economic and technological progress have vastly increased the investment opportunities available to firms having only limited funds. Rapid technological advance has tended to increase the lag between decision making and the benefits of these decisions. It has also increased the necessary size of capital committements and caused the rate of technical and product obsolescence to increase."[1]

Thus, correct project appraisal decisions are increasingly crucial. Mistakes are not easily recouped for most capital investments are highly specific and have little values in alternatives. Similarly, technical progress has made industry more capital intensive and thus investment decisions increasingly determine the long-term frame work in which they operate.

The increasing complexity of modern industry has forced top management to delegate much of the analysis necessary for project appraisal to Staff Speicalists.

This makes imperative the provision of sound, comprehensive decisions rules for investment decisions. A set of decision rules for Investment which are understood and accepted as rational within the firm are essential in this context.

Despite the increasing importance of capital budgeting, solution to some of its problems have not yet emerged. Dominant among these, is the lack of a sound theoretical or operational way of handling the problem of uncertainty.

This problem is still encountered even though prediction and measurements of receipts and costs have been made easier by advances in economic forecasting, econometrics and Budgetary Control. Consequently, one of the main objective of this research work is to address the problem of uncertainty and make some positive suggestions.

1.2 STATEMENT OF THE PROBLEM:

The primary objective of Capital Investment has always been still remains, increasing the wealth of the firms. That is, increasing the market value of the firm's shares through efficient allocation of capital. It is of considerable significance since it tends to determine its size, set of pace and direction of its growth and affects its business risk.

Despite the universal acceptance of its objectives, the techniques employed in arriving at these decisions have continued to change over time. It has been observed that the most fundamental change has been the tendency to progressively tap the benefits of Capital Investment.

The dynamism in these techniques has been necessitated by the phenomenal growth in the size of business enterprises, improve and efficient method of operations, the advent of computers and by implications the number of Capital Investment decisions made in any given period under review. The reasoning here is quite simple; if capital investment decisions

are accurately made, then the market value of the firm's shares ought to rise-ceteries paribus. This ultimately accrues benefits to the inventors, the public and other interested parties. From the foregoing, one wonders as to what constitutes the underlying principles practised in Nigerian Companies? These twin questions together represent the problem of the research.

1.3 AIMS AND OBJECTIVES OF THE STUDY.

The aim of the study could be divided into two. Firstly, the research is aimed to present the process and techniques of Capital Investment in its theoretical framework as can be expected in an Ideal Situation.

Secondly, the research ascertains the process and techniques of capital investment as practised in United Nigeria Textile Limited (UNTL) Kaduna.

It is therefore the objective of this research to harmonize the two aims above and put a fairly generalised conclusion whether the process and techniques of Capital Investment practised in UNTL conforms reasonably with the theoretical standards.

It is hope that this study would throw some light on the true nature of the problems faced in Capital Investment Decisions. In the process one would be in a position to offer certain useful suggestions to be followed by this company so that it can derive maximum benefits from their investments.

In order to achieve the aims and objectives, the study covers quite a wide range of topics as defined under the Scope of the Study.

1.4 SCOPE OF THE STUDY.

The scope of the research covers the essential theoretical framework of Capital Investment, ranging from the basic foundations known as the Capital Investment Process to the applications of the preferred techniques to specific Investment Project.

On the practical aspect of the research, the practise of Capital Investment in (UNTL) is studied to ascertain whether their capital investment decisions confirm reasonably well with the theoretical standards that can be expected in an ideal situation.

And if there is any deviations, to offer some useful suggestions on how such situations can be corrected to enable the company derive maximum benefits from their capital investment decisions. In order to cover all aspects of the research, a number of methods were employed at the data collection stages of the research.

These are breifly discussed under research methodology.

1.5 RESEARCH METHODOLOGY.

The data collection process had been split into two phases. One phase concentrated on gathering data on the theoritical aspect of capital investment during which text books and journals on the subject were consulted.

The collection of data on the process and techniques of capital investment in United Nigeria Textile Limited involved a combination of the use of questionnaire; personal interviews and study of historical records. Of particular importance is the personal interviews as the researcher was opportuned to meet and talk with the officers responsible for making such decisions about the stages, techniques,

problems and future prospects of Capital Investment in (UNTL). However, all was not smooth sailing, the researcher encountered a number of difficulties during the data collection stages which are high lighted under the limitations of the research.

1.6 LIMITATIONS OF THE STUDY.

The problems that militated against this study were numerous and diverse. The research however has been completed and this presentation is a pointer to the fact that most of the problems have been weathered.

For record the major limitations enumerated thus:-

(a) There is an acute scarcity or the complete absence of Nigerian authored text books on the subject matter.

(b) The subject matter of the research is rather sensitive. As such, certain items of information are termed "Classified," hence can not be made available to the researcher. That not withstanding, enough data were collected for the purpose of the research.

(c) Finally, no statement on the limitations of the research will be complete without reference to time constraints with in which the project was to be presented.

The relevance of the study in Nigerian context now follows.

1.7 RELEVANCE OF THE STUDY.

In view of the fact that investments in fixed assets are usually of long term duration, such investment could determine the future growth and prosperity of firms. Moreso, an investment in an asset may preclude a firm from using its resources for other purposes. Many companies have been known to fold up because of making a single wrong investment decision.

Funds are scarce and are borrowed on interest, the interest cost for the use of financial resources is also present (as opportunity cost) even when the funds are furnished by the owners as either capital investment or as retained earnings. The large out

lays of funds required capital. Investment calls for an optimal approach to capital investment decisions. Capital budgeting techniques are designed to aid management in making rational economic decisions like in determining the profitability of investments and in selecting from among alternative investments.

In order to benefit from the use of these tools, it is imperative that companies have a firm knowledge of Capital Budgeting techniques so as to ensure that they make reasonable investments to maximise the wealth of the share holders, fulfill obligations to creditors, and justify the use of such borrowed funds.

Consequently, this study will serve as a guide to companies in making capital investment decisions that will be in accordance with the company's objective of maximising the wealth of the share holders.

1.8 ORGANISATION OF CHAPTERS.

The study is divided into five chapters. Chapter one will be on general introduction with emphasis on the central problems of the study and the objective to be achieved. The relevance of the study in the Nigerian situations and the methodology of

of collecting informations to attain the stated objectives and considered. This chapter also dwells on the scope and limitations of the study.

Chapter two (2) discusses a brief review of the past studies and the theoretical background study. Item treated in this section includes; the meaning of Capital Investment its importance and the rationale for making capital investment decisions. Also considered, in this chapter are the phases of capital investment process; cost of capital, the administrative procedures of capital investment decisions, risk analysis in capital investment decisions and summary and conclusion.

Chapter three (3) deals with the historical background of United Nigeria Textile Limited (UNTL) Kaduna; its objedtives, organisational structure and the performance of the company up to date.

Chapter four (4) provides an insight into the evaluation and risk analysis techniques used by (UNTL). This analysis will also enable an opinion to be formed regarding the hypothesis of the Study.

Finally, chapter five (5) will be a general summary and conclusions of the study. This section also include recommendations for (UNTL) and for others who wish to improve on their capital investment decision practice based on the weaknesses observed.

The Capital Investment decision process is complex and it is hoped that United Nigeria Textile Limited (UNTL) and other Manufacturing Companies in Nigeria in the Manufacturing Sector of the Nigerian Economy in general will benefit immensely from this study.

Conclusion.

This chapter presented the introductory aspect of the study.

FOOT NOTES.

(1) Birman and Smidt; "The Capital Budgeting Decisions," 1975 Page 50 - 51.

(2) Pandy M. I. "Financial Management." 1981; Page 69.

(3) Van Horn J.C., "Financial Management and Policy." 1984; Page 121.

(4) Weston, J. F. and Brigham, E.F. "Managerial Finance" 1979; Page 100-109.

CHPATER TWO

LITERATURE REVIEW.

2.1 Overview of Chapter.

This chapter comprises the introductory discussions of some of the basic elements including their importance and characteristics which we use in our subsequent discussions. The terms like Company's Financial Objective, Investment, Capital Investment Decisions, and so on will be defined in the context of this disseration.

The latter part of the chapter concentrate on some of the important components of capital investment decisions such as: the long and short range plans, policy guidelines, proposal origination, post completion audit of capital projects, capital investment evaluation criteria, risk analysis of capital investment proposals.

2.2 Company's Financial Objective:

Foundamentally, any theory of optimal investment decision is based on the existence of an objective function which the firm should seek to maximize.

In capital investment decisions, the crucial problem is to decide which of the available investment opportunities a firm should accept or reject. To make this decision rationally, the firm must have an objective. There is consensus of option among financial experts, that the financial objective of a firm should be the maximization of owner's economic welfare. However, there is a general controversy as to how the economic welfare of owners should be maximised. This has led to the emergence of two Schools of thought. While one school of thought, the traditional economic theorists, advocate profit maximization criteria, the second school of thought, the modern financial theorists are of the opinion that the economic welfare of owners should be maximized using wealth maximization criteria.

The traditional economists advocate that the rule of maximization, can be applied to any capital investment project by the selection of capital investment projects that only add to the profits of the firm after all costs, including the cost of capital have been met. They further contend that, in the traditional short-run theory of a firm with a fixed amount of capital, the firm seeks to maximize

its naira profit, while in the short run, it can either increase or reduce its capital investment. A firm will either increase or reduce its capital investment, if the return on capital investment is greater or less than the normal rate of return on the invested capital respectively.

While it will remain its capital investment if it earns a return equal to the normal rate of return on invested capital. Thus, they argue that the above process is the same as profit maximization on the recognition that the normal rate of return on invested capital represents a cost rather than a profit.

The appropriateness of profit maximization objective may be justified on any of the following counts:-

(a) A human being, performing any economic activity rationally aims at utility maximization. It is argued that utility can easily be measured in terms of profit. Thus profit maximization is justified on the ground of rationality.

(b) Profit Maximization ensures economic natural selection and in the ultimate end only profit maximizers survive.

(c) The firm by pursuing its objective of profit maximization, also maximizes social economic welfare.

(d) A free competitive capital market, inspite of the absence of competition in product markets, will allocate monopoly rights over capital to those who can use it most profitably. Thus, profit maximization will be a motive force to acquire the monopoly power in the imperfect product market.

On the other hand, modern financial theorists contend that, the wealth of the owners of a firm, that is, the shareholders is reflected by the market value of the company's share. Consequently, the maximization principle implies that the financial objective of a firm should be to maximize the market value of its shares. The value of a company's share is represented by their market price which in turn is

a reflection of the firm's financial decisions. The market price serves as a performance index or report land to the firm's progress, it indicates how well management is doing on behalf of its hareholders. In determining the market value of common shares under conditions of uncertainty, limites holders the view that in a perfect capital market with homogeneous investors expectations, the risk of a security in a portfolio is measured by the weighted average of the variance of its returns. Thus the price of a share, then is a function of its expected earnings, the pure rate of interest, the price of risk and the risk measured in this way.

2.3 The Nature and Meaning of Investment.

The act of investment involves the acquisition of a good which is not destined to be consumed or entirely used up in the current period. It is a means by which individuals or a group can attempt to influence their future well-being by sacrifice of current consumption.

But the present is relatively well known whereas the future is always an engima. Investment is also, therefore certain sacrifice for uncertain benefits."

In a much broader definition, Larsberg perceived investment as "any activity for which outlays and benefits are not expected to be concurrent."

At the individual level investment decisions are taken in order to improve future consumption prospects and because it involves an increase in wealth which may be desirable in itself, and one of the basis of personal power. Investment by individuals may take the form of direct purchase of capital assets which are either in tangible such as education or tangible such as houses. Alternatively, individuals may purchase financial assets.

In the case of firms, investment can take different forms. They may invest in certain types of training for their employees, in 'goodwill' via advertising expenditure, in 'knowledge' via research and development activities, in stock of finished goods or raw materials or work in progress and finally in fixed capital stock as plant, or machinery, office blocks, or vehicles. It is the investment decisions of (UNTL) Kaduna to invest in this last category (fixed capital stock), that will be the subject of this dissertation.

2.4 Capital Investment Decision:

Definition of the Process:

The capital investment decision of a firm involves the decision to invest its funds most efficiently in long term activities in anticipation of an expected flow of future benefits over a series of years. Matz and Usry states that, "capital expenditure includes long term commitment of resources to realise future benefits."

Thus the term capital investment or budgeting or expenditure decisions shall be subsequently be used to refer to a decision on the commitment of resources now with the hope of realizing the benefits that are expected to occur reasonably long future period of time. Investment decisions determine the total amount of assets held by the firm, the composition of these assets, and the business risk complexion as perceived by the supplier of capital.

Although the ultimate reason for capital investment decisions is to improve or maintain overall profitability and value of the firm in the long run, however some other specific reasons may be to:-

(a) Reduce the present project cost of labour, energy, transportation, materials and the like.

(b) Increase the sales volume by increasing production capacity either internally or externally through acquisition of other enterprises.

(c) Upgrade a product's quality by adding facilities that will produce higher profit per unit sold.

(d) Protect or defend the present level of sales and profits by adding new facilities or replacing present facilities to satisfy government requirements or to remain competitive.

Classification of Capital Investments:

According to Dean, in Capital Investment Decisions, it is important to logically seperate capital expenditures into different categories because of the following reasons:-

The methods for applying the general principles of measuring capital productivity will differ according to the nature of the productivity.

The accuracy of rate-of-return estimates varies widely among types of investment, and there are some types which no estimates can be made at all.

Certain overiding strategic considerations should shelter some kinds of investments from the full vigours of rate-of-return rivalry and give them preference in capital rationing.

Capital investment proposals may be classified into tactical and strategic decisions. Tactical investment decisions involve relatively small amount of funds and do not result in a departure from the previous activities of the firm. This could be investment proposal designated to reduce costs in the output of existing products without altering the scale of operation. This may be in the form of mechanization of a process, replacing or modernizing a process or choosing between alternative machines. On the other hand, strategic investment decisions involve large sums of money and may also result in

major departure from the activities of the firm. A major example is a proposal to add new product to the product lines.

Capital investment decisions possess the distinguishing characteristics of exchange of funds for future benefits, investment of funds in long-term activities and the occurence of future benefits over a series of years.

The Importance of Capital Investment Decisions:

The importance of capital investment decisions can not be doubted. Individually, they are most crucial because of the long-term implications for the firm. The effects of capital budgeting decisions will extend into the future, and will have to be endured for a longer period than the consequences of current operating expenditure. Firm's decision to invest in long-term assets has a decisive influence on the rate and direction of its growth. A wrong decision can prove disastrous for the long term survival of the firm. Unwanted expansion of assets will result in unnecessary heavy operating costs to the firm.

Secondly, capital investment decisions involve the commitment of large amount of funds. The need

for substantial amount of funds for capital budgeting makes it imperative for the firm to plan its investment programmes very carefully and to make advance arrangement for procurring finances. As fixed assets investment decisions are critical to the health and survival of a business, they involve the commitment of huge sums for long periods and a single mistake can have a disastrous effect on the profitability of the firm.

Furtheremore, capital investment decisions are irreversible hence it is difficult finding a market for such capital goods. The only alternative available is to scrap the asset and incur heavy loss. Marret and Sykes contend that,

> the twin characteristics of irreversibility and risk give rise to the critical importance of capital budgeting in the management of a company. With the growing complexity and highly specific character of modern production and marketing methods, investment decisions are becoming more irreversible. Thus investment decicions are increasingly determing the direction and pace of a company's future growth and limit the opportunities open to it in much the same way that the tracks determine the speed and direction open to a locomotive.

The difficulties involved in making capital investment decisions also contribute in no small measure to their significance. Complexities arise in an attempt to correctly estimate uncertain future benefits and costs associated with capital investment proposals in quantitative terms.

Apart from providing a basic framework for the future development of a company, capital investment decisions are major determinant of efficiency and competitive power. To a greater extent, they influence the future earnings and growth of a company. According to Dean,

> from the standpoint of the Stock-holder and the consumer, capital expenditure decisions are Principal bulwarks against the seemingly endless progression of wage increase. From the stand point of labour, capital expenditures are the basic economic source of future wage advances since they embody the creative forward strides of advancing technology.
>
> Finally, capital expenditure both by their aggregate size, and by their cyclical timing, have a great deal to do with the government's role in maintaining stability.

2.5 The Administrative Procedures of Capital Investment Decisions:

The administrative process of capital investment decision involves many stages. Some of the important are:-

Long Ranage Planning:

Capital Budgets involve a long range planning horizone and forcast about a more extended future because the desirability to be derived from such assets extend over a substantial period of the future. They give an organisation an opportunity to establish meaningful goals for future operation.

These goals may be translated into plans for achieving objectives, and the plans in turn can furnish a framework for capital expenditure ideas. Ideas are most useful when evolved in a context of company objective and plans for the future. Usually, long range plans are for five years and typically integrate sales and cost projections, operating needs, capital equipment and financial needs, etc.

> as a systematic and formalised process for purposefully directing and controlling the future operation of a company towards desired objectives for period beyond one year. Long range planning should cover a period long enough to provide management with opportunity to anticipate future problems and thus to have sufficient freedom of action to resolve them in an orderly manner.

On the necesity of corporate planning in business organisation, Argenti says, "sooner or later most companies ran out of steam, reach a Plateau and lose their way." This could happen because:

(a) The product on which their prosperity was based has become out dated.

(b) They have grown so fast that management cannot cope with the problem of the growth.

(c) The original owner of the business has died and there is a leadership vacum.

(d) Management could not foresee the changes taking place around the company's consumer market or technological advancement in the industry or changing

cost structure or organisation which is structurally complex.

(e) Companies need corporate planning, if they want to meet future demand of their products by the process of diversification or expanding investment or when they want to discontinue a section of their activity (a process of disinvestment).

The use of a long plan may permit those having ideas about capital expenditures and responsible for specific programmes to be guided by two kinds of rationale: one based on top management goal for the future and the other grounded in useful combination of immediate objectives and external and internal conditions limiting such objectives. This will permit greater realism, help to assure a commonality of approach among divisions, and also allow the total organisation capital plans with sales, operating and cash budgets. Hence a definition of objectives and plans "gives the key as to what basically to do, where to place the primary emphasis, and what to accomplish by the network of policies

procedures, budgets and programmes."

Policy Guidelines:

Policy guidelines facilitate the translation of long range plans or more immediate objectives of a company in to specific capital expenditure proposals. They are most useful in larger firms where size often leads to conflicting divisional objectives. Financial theorists generally contend that policy guidelines should be specific enough to ensure company wide adherence to policy, but also general enough to permit flexibility, imagination and initiative to flourish at operating levels.

There are two types of guidelines, the long run and the short run.

The long run guidelines relate to top management future objectives which could be translated into general statements concerning: the physical growth objectives of the firm, spelt out in terms of specific years, expectations as to future size of the market(s) and the market share that the firm should try to secure, general economic or specific industry conditions enviaaged for the long run

and any other kinds of long run company objective likely to affect expenditure planning.

Short run guidelines, on the other hand relate to conditions external to the firm as exemplified by competitive activity, economic or technological conditions. They deal with factors such as, sales forecasts, wages and material projections, naira resources and immediate general or regional economic conditions. Short run policy guidelines are often prepared cooperatively by budget personnel, company economists and other staff personnel. In some few firms, management may seek the advice of operating personnel.

Investment Proposals Origination:

Origination of capital investment proposal ideas is an important aspect of capital investment decision process. Proposal ideas do not generally crop up overnight, but require careful and well thought out planning within an organisation. The search for capital investment projects is not limited to any one function or group of managers. They

often originate from several outisde sources and in every corner of the business enterprise such as:

(a) The search and development from a detailed study and analysis of, existing industries to reveal needs not at present served by local industries or markets inadequately served, population trends and demographic data to reveal the need for various types of products and the changing economic trend which may create new public needs.

(b) Modern facilities, as suggested by sales personnel, to remain competitive and maintain or increase present market share.

(c) Acquisition projects, as suggested to investment bankers or corporate planning personnel, to increase market shares or diversify into other business.

(d) Replacement projects, as suggested by operating personnel to reduce increasing maintenance costs;

(e) Expansion of facilities to satisfy growing demand for product, as projected by marketing research personnel.

Norton, contend that: "the most workable suggestions for the removal of bottlenecks and consequent capital expenditures relating there to come from workmen and foremen. Likewise, industrial engineers and plant staff are apt to develop useful ideas in the course of their daily work."

In addition: Hill remarks that,

> The untapped profit potentialities in any business appears to be innumerable. A Manager or Supervisor working in this fertile field will frequently be struck with a new idea if he has a fair modicum of common sense and some basic training in the analysis of capital projects he can subject his ideas to his own screening process to see whether it will bear critical scrutiny.

Request Preparation:

After a careful screening of proposal ideas by originators, the next step is the preparation of request by the profit centre that initiates the project. This concept is important under the

philosophy of profit centres whereby individual managers have specific responsibility for conceiving ideas, proposing it to corporate management and implementing the proposal that will help in achieving the company's strategic plan.

A request is a document that clearly describes in a logical and systematic manner the project being recommended. It includes all key factors, both pros and cons, that are evaluated in arriving at a decision to clarify the reason behind management's recommendation.

Financial theorists contend that, a request should be as realistic as possible and convey a true flavour of the project, covering both the anticipated opportunities and risks. Furtheremore, it should be capable of convincing the reader that all important factors have been adeuqately considered.

In a relatively decentralised organisation, formal presentation are an essential communication medium among profit centres, corporate management, and board of directors. Request are reflections of management evaluates the abilities of profit centre

personnel and on which the board of directors will appraise the abilities of both profit centre and corporate management.

Short-Ranage Capital Budget:

In the administrative process of capital budgeting decisions the use of fairly specific short range plans are of paramount significance. Short-range capital budget is a defination of near-term objectives designed to cover estimated needs for one year period. They help in the coordination and guidiance of the many facets of business operating of such budgets, forces operating management to submit the bulk its capital proposals early enough to give top management an indication of the company's aggregate demand for funds. A comparison of the total capital requested, with the supply of funds available, helps management in weighing the desirability of outside financing or the need for cut backs.

Short range capital budgets are prepared by a budget committee composed of operating executives and

financial officers. Their function is to review all capital budget requests submitted by various profit centres or departments and undertake a reconciliation of the financial and operating aims of management in the light of policies determined by the board of directors. This will facilitate the reporting of any significant features of the plan, indicated or implied, to the board of directors, to reach a final policy decision in several important fields. The short run planning exercise is completed when the committee's reports and recommendations about individual projects are submitted to the board of directors for scrutiny and approval.

Capital Expenditure Approval:

Depending upon the amount of capital investment expenditure, initial approval rests at different levels companies. Minor capital expenditures of a lesser amount may be approved by a factory manager of a departmental head. As the sum increases and as we move away from replacement decisions, approvals are typically required at higher levels within the organisation by the board of directors. This provides the board of directors an opportunity to examine the

aims of operating management and see how they can be met by the ingenuity of financial management. Furthermore, it enables them to agfee upon a programme which should work out to the best interest of the owners. Where adoption of new policies are involved, the board of directors would want to take ample time in thoroughly exploring the capital budget before giving final approval or ordering its modification along specific lines.

Control of Authorised Capital Expenditures:

On approval of capital budgets, the finance department characteristically has the responsibility of scheduling and acquiring funds to meet payments. It is also the responsibility of members of finance department to cooperate with members of operating division to control and compile systematic records on the uses of funds and equipment purchased in capital budgetting programme. Controls are needed to ensure that facilities conform to specifications and outlays does not exceed the amount authorised.

Post Completion Audit:

One major problem commonly encountered in capital budgeting process is the poor quality of input data

used to support an investment proposal. This can be reduced to a great extent by subjecting all major investment projects to an audit by a team of individuals from the profit centres and corporate department once the project is in full operation. A post-completion audit of the earnings performance of capital investment projects is necessary to preserve the integrity of the estimates of projected earnings and to provide an experience base for imporving such future estimates.

Furthermore, it serves to hold the estimators to continued responsibility - that is, if those who do the estimation know that an audit will be made, they might be mere careful in their forecasting than otherwise might be the case. Also it implies that management recognises the importance of investment decisions and the studies that underlie them.

The fundamental guidelines in initiating and preparing a post completion audit include: identifying when the first audit should be performed, assigning responsibility to people who should perform and review the audit, making decisions as to what projects

and types of information to audit and planning the audit.

Retirement and Disposal of Investment Projects:

In a capital investment decision process, projects are retired and disposed of when they are unable to make the required rate of return in their liquidation value. According to Dean, "Management's responsibility for an investment project ceases only when the facilitates have been disposed of." Thus, it is the responsibility of departmental heads to frequently take stock of their facilities to see which project should be sold or abandoned before or after their estimated economic life has been reached. This depends on when projects are unable to make the required rate of return.

2.6 Capital Investment Evaluation Criteria:

The heart of good capital investment decision is the measurement of the economic worth of investment proposals. To have an effective measure, sound appraisal criteria are utilized by companies.

Capital investment criteria should at least posses the following characteristics:-

(a) It should be capable of summarizing in a single figures all information relevant to a decision, that is, it should be able to distinguish between acceptable and unacceptable projects.

(b) It should be applicable to all types of proposals and permit appraisal in terms of a single set of standards.

(c) It should provide a means of ranking projects in order of desirability and solving the problem of choosing among alternative projects.

(d) It should provide an index that is relatively simple to compute and recorgnize the fact that bigger benefits are preferable to later benefits.

(e) Finally, it should permit simple adjustment to allow for ranges of uncertainty in the earnings estimated.

There are a number of capital investment criteria in use. Some of the most widely accepted are:

The traditional capital investment criteria.
The discounted cashflow criteria
The Mathematical Programming Criteria.

The Traditional Capital Investment Evaluation Criteria:

The traditional capital investment evaluation criteria consist of the payback period and accounting rate of return.

Payback Period:

One of the most popular and widely recorgnised traditional methods of evaluating capital investment proposal is the payback period. It is the number of years it takes a firm to recover its original investment from net cash flow. It is calculated by dividing the after-tax cash inflows expected to be derived from a project into the after-tax cash outflows relating to the cost of the project if the anticipated after-tax cash inflows are equal each year. When the yearly cash inflows are un-equal, payback period is

calculated by adding up the cash inflows until the total is equal to the initial cash outlay.

Under this approach, projects may be accepted or rejected based on the number of years required to recover the cost of initial capital investment. In ranking of projects, the shorter the pay back period, the higher the ranking.

The payback period is simple to understand and easy to calculate. Also, it costs less than the most sophisticated techniques which require alot of analyst's time and the use of computer.

Inspite of its benefits, the payback may not be a desirable investment criterion since it suffers from a number of limitations:-

(a) It fails to take account of cash inflows earned after the payback period.

(b) It is not an appropriate method of measuring the profitability of an investmentproject, as it does not consider the entire cash inflows yielded by the project.

(c) It fails to consider the magnitude and timing of cash inflows.

(d) Administrative difficulties may be faced in determining the maximum acceptable payback period.

There is no rational basis for setting a maximum payback period. It is generally a subjective decision.

Accounting Rate of Return (ARR).

The accounting rate of return was developed to take care of drawbacks of cash inflows of the payback period. It is the ratio of profit (net of accounting depreciation) to Capital Accounting rate of return is calculated by dividing the average income after taxes by the average investment and is represented by the formula:

$$ARR = \frac{\text{Average income}}{\text{Average Investment.}}$$

The accept or reject rule is to accept all projects whose ARR is higher than the minimum rate of return established by management and reject those whose ARR is less than the minimum rate of return. Projects are ranked in a descending order according to the highest ARR.

The accounting rate of return method is very simple to understand and use. Also it takes into consideration all cash inflows arising from a given project in term of profits earned. However, it has the following weaknesses:

(a) It uses accounting profits, not cash flows in appraising projects.

(b) It ginores the time value of money. Profits occuring in different periods are valued equally.

(c) It is incompatible with the firm's objective of maximizing the market value of shares. Share values do not depend upon accounting rates.

Discounted Cash Flow Methods:

The discounted cash flow methods were developed because of the numerous shortcomings of the traditional approaches. They consist of the Net Present Value, Internal rate of return, and the profitability index methods. According to Mclean, "the discounted cash flow method rests on the term - honoured maxim that 'money begets money." Furthermore, he states that:

> Funds on hand today can be invested in profitable projects and thereby yield additional funds to the investing company. Funds to be received at some future date cannot be profitably invested until that time, and so have no earning power in the interim. For this reason, a business concern must place a time value on its money - a naira in hand today is much more valuable than one to be received in the distant future. The discounted cash flow method simply applies this general concept to the analysis of a new capital investments.

Net Present Value Method:

The Net Present Value Method (NPV) is one of the discounted cash flow methods used in the

appraisal of capital investment proposals. It is "the present value of the project's net cash flows discounted at the company's cost of capital to the time of the initial capital outlay, minus that initial capital outlay."

The NPV of an investment proposal is represented by the formula:

$$NPV = \sum_{t=0}^{n} \frac{At}{(1+k)t}$$

where

K = the required rate of return.

At = cash flow for the period t, whether it be a net cash flow or inflow.

n = the last period in which cash flow is expected.

The acceptance rule under this approach is to accept investment project if its NPV is positive, or equal to zero, and to reject investment projects with negative NPV. The market value of the firm's

share is expected to increase if projects with positive net present values are accepted. Projects are ranked according to their NPV and those with the highest NPV are given the highest rank.

The NPV criterion is popular because it recorgnises the time value of money and considers all cash flows over the entire life of the project in its calculations. Furthermore, it is consistent with the objective of maximizing the welfare of the owners.

Inspite of its merits, the net present value approach suffers from the following draw back;

(a) The calculation of the present value pre-supposes that the discount rate which is usually the firm's cost of capital is known. But the cost of capital is quite a difficult concept to understand and measure in practice.

(b) It may not give satisfactory answer when the projects being compared involve different amounts of investment. The

Project with higher NPV may not be desirable if it also requires a large investment.

(c) It is difficult to use.

(d) It may mislead when dealing with alternative projects, or limited funds under the condition of unequal lives. The alternative with the higher net present value may involve larger economic life to the point that it would be less desirable than an alternative having a shorter life.

Internal Rate of Return:

To offset the absolute and assumed cost of capital limitations of the net present value approach, the internal rate of return (IRR) method was developed. It refers to the rate of return which is internal to a given project for discounting various cash inflows accuring from a given project in such a way that the time value of cash inflows at the internal rate of return will be equal to the initial investment. The formula for IRR is represented by:

$$\sum_{t=1}^{n} \frac{At}{(1+r)t} - Io = 0$$

Where,

r = the internal rate of return

At = cash inflows accuring in period t

Io = initial capital outlay.

n = the last period in which a cash flow is expected.

'r' is not the same as 'K'. 'K' in NPV Criterion is assumed cost of capital. Under IRR method, 'r' is calculated through an iterative process and is the internal rate of return.

All projects are accepted when IRR is greater than or equal to the minimum rate of return and rejected when IRR is low than the minimum rate of return. In capital rationing, projects with the highest IRR are ranked in descending order and are selected till the budget is exhausted.

Internal rate of return approach is advocated by financial theorists because:

(a) Like the NPV method, it considers the time value of money.

(b) It considers all cash inflows over the total life span of a project.

(c) It is not based upon assumed cost of capital.

(d) It gives a rate of return for considering a project than an absolute value of NPV.

(e) It is very easy to understand, use, and is directly consistent with firm's owner's welfare maximisation objective.

However, the IRR method suffers from the following limitations:

(a) It is difficult in terms of computation of the value of IRR.

(b) The method is based upon an assumption of reinvestment rate being the same as IRR of each individual project.

(c) There may exist multiple values of IRR.

Profitability Index Method:

The profitability index (PI) or benefit-cost (B/C) ratio is also one of the time adjusted techniques of evaluating capital investment proposals. It is the ratio of the present value of cash inflows and is represented by the formula:

$$PI = \frac{\text{PV of cash inflows}}{\text{initial cash outlay}} \qquad \sum_{t=1}^{n} \frac{At}{(1+k)t} \Big/ Io$$

Profitability index is a conceptually sound method of appraising investment projects. It gives due consideration to the time value of money. Administratively, it requires more computation than the traditional methods, but less than the IRR method. The acceptance rule, is to accept projects with PI. Highest rank will be given to the Project with the highest PI, while lowest rank is assigned to the Project with the lowest PI.

Capital Rationing:

In some circumstances, in choosing a set of investment projects, firms may be faced with limited amounts of capital investment. Consequently, some

profitable projects whose net present values, profitability index are greater than one, or internal rate of return greater than the cut-off rate could be rejected. This situation is described as capital rationing. It refers to a situation where the firm is constrained by external or self-imposed reasons to obtain necessary funds to invest in all profitable investment projects.

There are two types of capital rationing, external and internal rationing. External capital rationing results because of capital market imperfection which may be caused by deficiencies in market information, the rigidities hampering free flow of capital between firm's or transaction costs. On the other hand, internal capital rationing results from self imposed restrictions by top management. There are usually multi-farious self-imposed restrictions. A company with a conservative policy, may decide not to obtain additional capital by incurring debt. Similarly, management may fix an arbitrary limit to the amount of funds to be invested by the divisional manager.

Under rationing of capital, the selection process involves of projects according to some measure of profitability until the funds are exhausted. Although projects can be ranked either by the net present value or internal rate of return or profitability index, preference is sometimes shown for the internal rate of return on the belief that it is easily understood. On the other hand, there are others who advocate the use of profitability index over the present value. It is argued that net present value is the assolute measure of profitability, while the profitability index determines the relative profitability, being a ratio of future wealth per naira of present investment.

Mathematical Programming Methods:

The traditional and discounted cash flow techniques of capital investment appraisal are based on the assumptions of: certain profits and cash flows, attainment of a single objective and one by one consideration and rankingof alternative investment projects. These assumptions, however, do not obtain in real world situations. For example, it is

unrealistic to assume that, future profits and cash flows are uncertain due to either economic, political or social factors, Furthermore, firms in most cases have more than one attainable objective. To take care of these unrealistic assumptions, the mathematical programming methods were developed. They are also useful in the allocation of capital rationing.

Linear Programming Method:

Linear Programming is a mathematical technique for obtaining an optimal solution to problems that can be put in a particular structural form. It is applicable to problems in which the firm is capable of acting only within the confines of a set of linear constraints, and for which the firm wishes to find the course of action that maximises some linear objective function. It is represented by the formula:-

$$\text{Maximize} \quad \sum_{j=1}^{n} bj\ xj$$

Subject to the budget constraint

$$\sum_{j=1}^{n} ctj \leq ct$$

$$0 \leq xj \leq 1$$

where,

Xj = alternative projects under consideration.

bj = net present value.

ctj = amount of capital outlay required in jth project in the t^{th} period.

C_t = amount of total funds available in period t.

Linear programming approach considers all alternative investment proposals simultaneously and enables an optimal solution to be obtained

where net present value is maximised. Furthermore, it facilitates a full utilization of all financial or other type of resources treated as constraints. However, it gives solutions in fractions and difficulties may be encountered in application where the investment projects under consideration and constraints are large.

Integer Programming Method:

Integer programming method is another mathematical programming technique used for evaluating capital investment proposals under capital rationing. It was developed by Weingartner to solve the fractional problem of linear programming method. Integar programming is a linear programming problem with the added condition that all variables can take only integer values. To find the subset of projects which maximises the total net present value of those accepted while simultaneously satisfying a constraint on the out lays in each of the two periods, given the net present value of a set of independent investment alternatives and required outlays for the projects in each of the two time periods,

Weigngartner remarks; "the problem may be generalised to an arbitrary number of time period and stated formally as an integer programming problem."

The model is represented by the formula:

$$\text{Maximize} \quad \sum_{j}^{n} = lbj = xj$$

$$\text{Subject to} \quad \sum_{j}^{n} = 1\ ctj \quad ct, t=1,\ldots T$$

$$0 \quad xj \quad 1, j = 1 \ldots\ldots n$$

Although integer programming approach helps in solving the problem of project indivisibility, however, it does not exhaust all funds or maximize net present value.

Goal Programming Models:

The goal programming method was developed to take care of the single objective function limitation of other capital budgeting evaluation techniques. It assumes the attainment of multiple objectives by firms. Under this approach, all goals are incorporated into the objective function after

ordinal assignment of priorities, and only the true environmental conditions are treated as constraints. Each goal set at a value that is judged satisfactory by the management of a firm, which is not necessarily the best attainable.

The computational procedure involves the choice from a set of solutions, that which satisfies the constraints and best fulfils management's announced targets. Since the objective is to produce satisfactory results rather than the best possible results, the firm is said to be adopting a 'Satisficing' behaviour.

The modified goal programming model orginally applied to capital budgeting decisions by Hawkins and Adams, and proposed by Agarwal, Parwal and Swarup, in corporating priority coefficients and applicable to capital budgeting problem is shown below.

$$\text{Minimize} \quad Z = \sum_{i=1}^{n} (pi^{+}di^{+} + Pi^{-}\, di^{-}).$$

$$\text{Subject to} \quad axi + di \quad di^{+} = bi$$

$$xi, di, di^{+} \quad 0$$

where

dt^+ = deviational variable above specified goals.

di^- = deviational variable below specified goals.

Pi = Priority Coefficient assigned to goal i,

$$Pi \qquad np\ (i + 1)$$

n = number of goals in the model

x = constrained to be non-negative.

The goal programming model as specified above attempts to minimize deviational variables between goals both sequentially and simultaneously allowing for scaler weighting and or ordinal ranking, instead of attempting to minimize or maximize the objective criterion as in linear programming. These deviational variables may be positive and/or pre-emptive priority.

Inspite of its multiple objective benefit, the goal programming model has the limitation of giving solutions in fractions. In addition, it requires

the knowledge of high technical skills and the use of computers.

2.7 Risk Analysis in Capital Investment Decisions:

In real world situation, the firm in general and its investment projects in particular are exposed to different degrees of risk. Risk exists due to the inability of decision makers to make perfect cash flow forecasts. This occurs because the future events upon which they depend are uncertain.

Cash flow forecasts are influenced by many factors categorized into three broad groups. The first group consist of factors influencing the level of business activities such as, internal and external economic and political situations, governments' monetary and fiscal policies, social conditions and soon. The second group relates to factors affecting all companies in an industry. They include, industrial relations in the industry, innovations, changes in material cost and so on. The third category consist of factors influencing an individual company as exemplified by a change in management, strike in the company, natural disasters, etc.

The purpose of risk analysis in capital investment decisions according to Carter is to:

> Help an executive who is trying to decide whether he ought to make an expenditure, look ahead to all the different outcomes he might expect as a result of the expenditure. Then, the theory goes, he will be in a position to weight the return he may get from the expenditure against the risk in which the expenditure is going to involve him and his company. Most frequently the decision at hand will be a capital budgeting decision.

Risk has been defined by Townsend as "any situation in which we do not know the outcome of an event with certainty, but in which the following are known, the number of alternative possible outcome (assumed to be finite), the value of each outcome and the probability of accurence." In modern capital investment analysis, risk is perceived as the dispersion of return-that is, the possible deviation (both positive and negative) from the expected return.

Traditional Techniques of Risk Incorporation:

The traditional methods of incorporating risk into capital investment decision consist of the pay back period, risk-adjusted discount rate and the certainty equivalent approach.

Pay Back Period:

The payback period is one of the oldest and commonly used methods for explictly recognizing the risk associated with an investment project. The procedure for incorporating risk into capital investment decision is the choice of a shorter pay back period and the establishment of guidelines such that the firm accepts only investments with some minimum payaback period of about three or five years.

The payaback period is popular for its simplicity, and preference of short-term project over what may be riskier, longer term projects. However, in addition to the limitations specified in page 33, it suffers from another shortcoming: the setting of maximum payback period as two, three or five years usually has little logical relationship to risk preference of individual firms.

Risk-Adjusted Discount Rate:

The risk - adjusted discount rate is another conventional method of incorporating risk into capital investment decisions. Economic theorists contend that risk should be incorporated into capital investment decision using a risk adjusted discount

rate because the more uncertain future return is, the greater the risk, and premium. Hence the risk adjusted discount rate is arrived at by the addition of a risk premium (that reflects investors attitude towards risk) to the risk-free rate. It is represented by the formula:

$$NPV = \sum_{t=1}^{n} \frac{At}{(1 + k^*)} t$$

where,

K^* = the risk - adjusted discount rate.

that is $k^* = i + Q$

where, i = the risk free rate

Q = the risk premium

At = the forecasts of cashflow without risk adjustment.

n = the number of periods over which cash flows are expected.

The risk-adjusted discount rate is advocated because it has a great deal of intuitive appeal for risk-averse businessmen and incorporates an attitude (risk-averse) towards uncertainty. However, it suffers from the following limitations:

(a) There is no easy way of deriving a risk-adjusted discount rate.

(b) It does not make any risk adjustment in the numerator for the cash flows that are forecast over the future years.

(c) It is based on the assumption that investors are risk-averse. Though it is generally true, there do exist risk-seekers in the world willing to pay a premium to take risk.

Certainty-Equivalent Method:

The conventional certainty equivalent approach of introducing risk into capital investment decisions is based on an intuitive reduction of cash flow forecasts to some conservative level. The formula is:

$$NPV = \sum_{t=1}^{n} \frac{t \; At}{(1 + i)t}$$

Where,

At = the forecast of cash flows without risk adjustment.

$t = \frac{At}{At} = \frac{\text{Certain Cashflow}}{\text{Risk Cash flow}}$ = risk adjustment factor.

n = the number of period over which cash flow is expected.

i = the risk-free rate, assumed to be constant for all periods.

The certainty-equivalent approach explicitly recorgnises risk, but if forecasts have to pass through several layers of management the effects may be greatly exagerate the original forecast or to make it ultra conservative. Furthermore by focusing explicit attention only on the gloomy outcomes, chances are increased for passing some good investment.

Statistical Techniques of Incorporating Risk:

The conventional approaches of incorporating risk into capital investment decisions are based on some Obiguous assumptions which could lead the decision maker to wrong decisions despite their numerous benefits. To resolve these major limitations, some statistical analytical tools have been developed to adequately take care of risk in capital investment decisions.

Statistical techniques are based on probability theory which states that a forecast that must have a range of estimates and associated probabilities. A single estimate could be ambiguous, and difficult to determine the probability distribution surrounding such estimate. In addition, it is difficult to know whether such an estimate represents a mean, median or mode. Probability theory consist of objective and subjective probabilities. The objective probability is the estimate based on a very large number of observations, while the subjective probability reflects the state of belief of a person. The classical concept of objective probabilities is

a little use is analysing investment decisions because they are non-repetitive and hardly made under independent identical conditions overtime. In modern risk analysis, the most widely used method utilizes the expected (mean) profit as an indicator of an investment anticipated profitability and the variance or standard deviation as an indicator of risk.

Expected Monetary Value Approach:

The expected monetary value approach is one of the statistical techniques of explicitly incorporating risk into capital budgeting decision analysis. The expected monetary value is obtained by the summation of the resulting figure from the multiplication of the monetary value or cash inflows of the possible events by their corresponding probabilities as depicted by the formula:

$$A_t = \sum_{j}^{n} A_{jt} P_{jt}$$

where,

A_t = expected cash flow or return (monetary value) for a period.

Ajt = Cash flow for the jth event in the period t.

Risk in incorporated into capital investment decision by the formula:

$$NPV = \sum_{t=1}^{n} \frac{\bar{A}_t}{(1+k)^t}$$

where,

K = risk - free discount rate

n = the number of periods over which cash flows are expected.

Standard Deviation Approach:

The standard deviation is an absolute measure of risk. It measures the deviations or variance about the expected cash flow of each of the possible cash flows. It is represented by:

$$\sum_{x=1}^{n} (A_{yt} - \bar{A}_t)^2 \, P_{xt}$$

where,

A_{xt} = Cash flows for the Xth possibility in period t.

P_{xt} = Probability of occurrence of cash flow.

$\bar{A}_t$ = the expected value of cash flows in period t.

Coefficient of Variation Apprach:

While the standard deviation method is an absolute measure of risk, the coefficient of variation approach is a relative measure of risk. It is applicable when comparing projects, with, the same standard deviations, but different expected values, or different standard deviations but the same expected values, or different standard deviations and different expected values.

The formula is:

$$\text{Coefficient of variation} = \frac{\text{Standard Deviation}}{\text{Expected Value}}$$

Cashflows Correlation Overtime:

The probability distribution approaches use probability theory in analysing risk in capital investment decisions under various assumptions concerning the independence and dependence of cash flows over time. Under these assumptions, an investor is able to derive a trade off between risk and return, and select those projects that yield the highest expected return, which at the same time minimize risk to the firm.

Independence of Cash Flows Overtime.

Independence of cash flow overtime implies that the probability distribution for future periods are not dependent on each other. Hence the standard deviation measuring the risk of a project for each period is calculated separately. It is calculated by the formula:

$$r = \sum_{t=1}^{n} \frac{t^2}{(1+i)^{2+}}$$

Where,

= Standard deviation of the probability distribution of possible net cash flows.

t^2 = Variance of each period

i = Risk-free rate.

Where probability distribution is approximately normal, the normal probability distribution technique aids the further analysis of risk element in capital budgeting decisions.

Dependence of Cash Flows Overtime:

In most cases, the cash flows of investment projects are assumed to be dependent overtime because favourable and unfavourable outcome in earlier periods is generally accompanied by favourable outcome in later periods in the life of an investment project.

Hence it is necessary to know the degree of correlation among cash flows to correctly measure the risk of an investment project. Correlation among cash flows could be perfect of moderate.

(a) Perfect Correlation:

Where the cash flows of an investment project are perfectly correlated, the deviation of cash flows for one period implies the same for the next period. Thus the standard deviation is calculated by the formula:

$$\sum_{t=0} \frac{\sigma_t}{(1+i)^t}$$

Where,

σ_t = Standard deviation of the probability distribution of possible net cash flows in period t,

i = risk-free rate.

(b) Moderate Correlation:

In solutions where cash flows are moderately correlated, the problem can be taken care of by utilising the concepts of conditional probabilities and decision trees.

Decision Tree Approach:

The decision tree is an analytical technique used in analysing and evaluating sequential investment decision. It was developed to take care of the limitations of the seperate models constructed by Hiller, Weingartner and Adelson, in the theory of investment decisions under conditions of uncertainty which view current investment as isolated decisions that can be optimized without reference to sequential investment decisions. According to Masse, "Since present choices modify future alternatives, industrial activity cannot be reduced to a single decision and must be viewed as a sequence of decision extending from the present time into the future." "If Masse's decision is accepted we must view investment expenditures not as isolated period committments, but as links in a chain of present and future commitments." The decision tree approach

is based on the idea that important decisions are made in stages with subsequent decisions depending on the results of previous decisions. The sequence of events is displayed like the branches of a tree, hence the name decision tree.

In constructing a decision tree, the procedures include, definition of investment proposals, indentification of alternative decisions, graphing of decision tree indicating decision points, chance events and other data; location of relevant data such as projected cash flow, probability distribution, expected present values, etc on the decision tree branches, and lastly, the analysis of results using the "backward movement approach" and the selection of the best alternative.

The decision tree approach is being advocated by modern financial assumptions because it clearly brings out the implicit assumptions and calculations for all to see, question and revise. In addition, it allows a decision maker to visualise assumptions and alternatives in graphic form, which is usually

much easier to understand than the more abstract analytical form. However, the decision tree diagram can become more and more complicated as the decision maker decides to look farther and father in time.

Utility Theory Approach:

The utility theory approach of evaluating the attractiveness of risky capital investment proposal has its origin in the classical work of Neuman and Margenstern. It aims at explicitly incorporating a decision maker's risk preference into the decision procedure maker's risk preference into the decision procedure on the basis that, a rational decision maker seeks to maximize his utility. Thus he would accept the investment project that yields a maximum utility. This approach determines expected utilities in place of expected monetary values and is only applicable if the marginal utility of each naira to be gained or lost is not constant. This situation arises if the potential gain or loss of an investment is of significant size compared to the monetary resources of the individual or organisation considering the investment.

The utility method, consist of establishing the relative degree of usefulness of each of the possible outcomes of an investment or group of investments on some numerical scale. Thus, a utility index for money is established through a cardinal measure of utility, while utility is measured in utiles. The expected utility value of a particular investment is obtained, after specification of the decision maker's utility function by multiplying the utile value of a particular outcome by the probability of occurence, and adding together the products for all probabilities.

The utility approach is useful for directly incorporating the risk preference of the decision maker into the capital budgeting analysis. Also, it facilitates the process of delegating the authority for decision.

However, the use of utility theory is not common. The first limitation is that a derieved utility function at a point of time is valid only for that point of time. Another problem in

specifying the utility function is encountered if the decision is taken by a group of persons. Individuals differ in their risk preferences. As a result, it is very difficult to derive a consistent utility function for the group.

Portfolio Effects:

The Markowitz Approach:

While the traditional measures of risk have been applied to individual projects in isolation, the portfolio approach is based on the idea that, individual projects can be combined with others into groups of projects or portfolio. When viewed in its broader portfolio context, the appropriate measure of risk to be applied changes.

The existence of diversification in the holding of capital assets by investors was noted in the work of Markowitz and attempts have been made to apply his analysis to capital budgeting.

Markowitz, began his analysis of portfolio with the maximum expected return is not necessarily the one with the minimum variance, or reduce variance

by giving up expected return." He assumed that the investor considers, or should consider, expected return a desirable thing, and an efficient portfolio is that with the minimum variance for a given expected return or more and a maximum expected return for a given variance or less. Thus, if a already has an existing project, accepting a new project may alter a firm's total risk structure.

Furthermore, Markowitz noted that the risk structure depend upon the degree of correlation between the two projects and the differences in risk. Under this circumstances, if existing risk (measured by variance $_1^2$) is the same as additional risk ($_2^2$) then the lower the degree of correlation (the greater independence of projects), the more will the additional project reduce the overall risk strucutre of the firm. In other words, diversification of assets reduces risk if there is little interdependence. Thus the risk from doing one project is far higher than the risk from doing many projects even if they are all independent of each other. The second result if where $_1^2$ $_2^2$, positively correlated

projects will increase the overall risk, and negatively corrected projects will often significantly decrease risk.

The significance of these results, is that under taking projects with risks greater than those present in the existing structure may none the less reduce overall risk. This shows that the risk of a project cannot be measured by the variance of its probability distribution, it must also be indicated by the covariance of the project with the asset structure with which it will be joined, that is the riskness of the combined projects must be examined.

The riskness of a portfolio is measured by the standard deviation of expected returns. The formula for the riskness of a portfolio of N - Assets is:

$$P = \sum_{i=1}^{N} wi \; \overline{i}^{2} + 2 \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} Wiwjpij$$

Where,

Wj = Proportion of the investment allocated to security i

Wj = Proportion of the investment allocated to security j.

Pij = Correlation coefficient between security i and security j.

N = number of securities contained in the portfolio.

i j = Standard deviations of securities i and ji respectively.

Capital Asset Pricing Model:

The capital asset pricing model was developed to reduce the problem of finding out combinations of securities in the portfolio effect approach. It shows the relationship between expected returns, unavoidable risk, and the valuation of securities. Furthermore, it relates the return and standard deviation of a project (or security) to a broad based economic indicator of risk asset returns.

In capital market, based on the behaviour of risk-averse investors, there is an implied relationship between the risk and expected return of a

security. In market equilibrium, the expected returns from a security is commensurate with its unavoidable risk, that is, the risk that cannot be diversified away by investing in more securities. Thus, the higher the unavoidable risk, the greater the expected returns from a security or project.

Under this approach, the total risk of holding a security or project is the systematic risk plus the unsytematic risk. The unsystematic risk is unique to a particular firm and can be diversified away and eliminated by random selection of securities or projects into the portfolio. Thus in an efficient market where marginal investors are fully diversified the only important risk of holding a project/security is the systematic risk represented by Beta.

The expected rate of return for an individual security is related to the systematic risk of a project /security. On the assumption that the unsystematic risk of a security has been diversified away, the expected rate of return for project or security j is:

$$T_{2j} = i + (\bar{R}_m - j)\ BJ$$

where $\bar{R}j$ = expected return for jth security.

= risk-free rate

$\bar{R}M$ = expected rate of return for the market security.

Bj = Beta or systematic risk.

$(R_m - i)$ = risk premium.

Thus the expected rate of return of an individual security or project is the risk free rate and a risk premium. The higher the Beta (B) the higher $\bar{R}j$:

Although the capital asset pricing model is considered theoritically sound in measuring the risk of an investment project, however, it is a very difficult technique to apply in practice.

2.8 Summary and Conclusion:

This chapter has surveyed and discussed some of the important steps involved in the administrative

process of capital investment decisions. In the latter part of the chapter some of the traditional and modern techniques for the evaluation and risk analysis of capital investment proposals were also discussed. In conclusion, financial theorists contend that firms should adopt maximization of the market value of ordinary shares as their financial objective and use long range plans, policy guidelines in capital investment decisions. Also they contend that, proposal ideas should be encouraged from every level of personnel and other sources, while post completion audits should be carried out. The present value method is perceived as superior to the yield method, especially where there are several alternative investments available.

In capital rationing environment, the programming approaches have been advocated where firms have access to computer installations. There is an upward trend towards the use of the decision tree approach in risk analysis because in practice, capital investment decisions have implications for future capital investment decisions and conseuently affects future events and decisions. Finally,

although the portfolio effects and capital asset pricing model are theoretically sound techniques in risk analysis, however, they are the most difficult to apply in practice.

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CHAPTER THREE

ORIGIN, ORGANISATION AND ACTIVITIES OF UNITED NIGERIA TEXTILE LIMITED KADUNA(UNTL).

3.1 Historical Background.

The entry of the most popular brand of textile into Nigeria dates back to 1957 when the first set of 100 crates of textles were imported by individuals into the country. Within a period of two years, textle became so popular as a result of its dependability, reliability, suitability and durability to Nigerian populace, that is assumed the status house hold fabrics for many homes, both the wealthy and the less priveledge people. This unprecended achievement led to the appointment of distributors all over the country, and they started to import to neighbouring countries like Niger republic etc.

Since independence in 1960, the growth rate of Nigerian economy had taken such approportion that the number of imported fabrics no longer could cope with the demand, the then Military Government of Nigeria opened negotiations with all the textles manufacturing industries in Nigeria.

In 1980, there were 100 textiles establishments in the country locationally distributed as shown in Table 1.1 Lagos Zone led in the number of textile establishments, followed by the Northern Zones (Kaduna and Kano) which also contained the largest textile plants in the country.

TABLE I

Distribution of Textile Plants in Nigeria By Zones.

LOCATION	NO OF TEXTILE PLANTS
Lagos Zone	68
Kano Zone	17
Kaduna Zone	8
Eastern Zone	4
Western Zone	4
TOTAL	101

Source: N.I.S.E.R. The Nigerian Textile Market: A Comprehensive Survey of NNDC related Firms, May, 1988.

TABLE 2 EVOLUTION OF FIXED ASSET
(IN '000 of NAIRA)

YEAR	FIXED ASSET
1981	56,507
1982	53,755
1983	48,539
1984	42,911
1985	39,577
1986	107,833
1987	109,833
1988	94.3
1989	98.5

Source:- UNTL NEWS MAGAZINE JUNE/AUGUST 1919.

It is one of UNTL's achievable aspiration to produce over half a million containers of fabric before completing two decades in operation.

OWNERSHIP STRUCTURE:

The dynamics of the country's political and economic climate have affected the ownership of UNTL.

At the time of incorporation in 1972, the company's equity structure stood at:-

Federal Government of Nigeria	- 40%
Kaduna State Government	- 10%
Nigeria Textile Distributors	- 10%
Northern Nigeria Development Company (NNDC)	- 40%

However, in response to the changing economic reality and the political structure of the country, the company's equity structure changed as follows:-

Federal Government of Nigeria	- 35%
Northern Nigeria Development Company (NNDC)	- 40%
Kaduna State Industrial and Finance Company Limited	- 4%
Katsina State Development Company Ltd.	- 4.7%

Nigeria Industrial Development Bank (NIDB)	- 6.3%
UNTL Kaduna	- 5%
United Trading Company of Nigeria	- 5%

The equity structure may further change in line with the Federal Government decision to include Textile Assembly Plants among companies and organisation to be privatised. The technical committee on privatisation and commercialization (TCPC)'s Sub-Committee charged with the responsibility had already visited the company and arrangement for the privatisation is already in top gear.

3.2 Objective of UNTL.

It has been consistently analysed that an effective clothing system is indispensable to the existence of people in any nation, and economic prosperity depdnd largely on efficient, flexible and dynamic clothing system. It is against this back ground that United Nigeria Textile Limited of Kaduna was established in 1957, with the following objectives:

(a) To chart a course for Nigeria's industrialization in the areas of manufacturing and import textile materials.

(b) To engage in the local manufacturing or production of fabrics suitable to Nigeria's physical enviroment and climatic conditions;

(c) To produce fabrics and accessories to supplement or discourage importation of textile goods;

(d) To articulate a definite and viable policy on local content development and to reduce over dependence on imports in textle industry and therefore help conserve foreign exchange for the country;

(e) To serve as an avenue for the transfer of technology by providing on the job training to Nigeria workers, technicians and managers who would eventually develop

technology unable in many aspects of the economic life of the country.

(f) To create employment opportunities for the ever growing arms of skilled, semi-skilled and unskilled Nigerian by developing an industrial net work of suppliers who would contribute to the establishment of basic technologies in the field of maching, stamping, manufacturing of plastic parts etc.

Based on these objectives, it could be rightly said that apart from serving as a catalyst for the springing up of other forward and backward integrated industries, UNTL, was set up to serve as a concrete "Justification of Nigeria's Textile Industries."

3.3 Organizational Structure:

To function effectively, every business organization needs a structure which has the characteristics of unity, continuity, flexibility and predictability required for efficient interactions

within its environment. The problem of planning and monitoring which management must overcome to be successful is to ensure that the objectives of each part of the organisation are securely welded together (Unity); using both short and long term forcasting (continuity); being able to adopt the plan in the light of changing circumstances (flexibility); and attempting to accurately predict courses of action (prediction). The company has maintained a high standard of staff development, motivation and result oriented management team. The company's operations and procedures are under a continous review to meet the increasing challenges of its responsibility and expectations of its performance.

It is in view of the above, that UNTL's organizational chart is well structured to gurantee efficient and effective operations. At the apex of the pyramidal chart is a Board of Directors headed by a Chairman appointed by the Federal Government. The board of directors is the highest hierarchy. The body is saddled with the responsibility of formulating policy guidelines for implementation by the general management teams. They plan, organise,

set goals, and formulate policies. The collective policies and decisions of the board are carried out by the Chairman.

The general management team which oversees the day to day activities of the company is headed by a Managing Director, assisted by a Deputy Managing Director. Directly attached to the office of the office of the Managing Director are company's Secretary Department and three functional departments, namely:- Internal Audit, Corporate Planning and Data Processing.

There are four general managers, who run the affair's of the company's four (4) major divisions. These divisions are personnel Administration, Commercial, Finance and finally industrial. The General Managers are assisted by Deputy General Managers, Managers and other supporting staff.

(1) Personnel/Administration Division.

The primary responsibility of this division involves personnel and general Administration (e.g. Welfare). The basic objective of this division

is to bring together and develop into an active organisation men and women who make up the company and having regards to the well beings of the individuals and of working groups to enable them contribute to the overall success of the company.

The duties performed by this division in the discharge of its functions include the following:-

-Manpower planning, recruitment, selection, placement, discipline, training and appraisals.

-Working conditions and services

-Meeting and Procedures.

-Wages and Salary Administrations, etc.

This division is divided into three main departments:- namely Personnel/Administration; Training and Security.

The training department was established 1978 under the direction of the General Manager assisted by an Assistant General Manager and a Manager with the following objectives:-

(i) To provide the knowledge, skills and attitudes required in the industry;

(ii) To establish the avenue for preparation of Nigerians to take over Supervisory and Management responsibility;

(iii) And finally to prepare adequate grounds for the overall transfer of technology (technical skills, knowledge and attitudes) required in this industry.

The security department headed by Assistant General Manager is responsible for all security matters in the company. The Assistant General Manager is assisted by Senior Principal Security Officer.

(2) Commercial Division.

This division is mainly concerned with the implementation of the company's sales policies. The division is divided into two major departments. The departments are Network/Corporate Sales and After-Sales. Each department is headed by an Assistant General Manager and charged with specific functions:-

Network/Corporate Sales Department.

The Network Department activities form an important bridge between the distributors and UNTL Management; and between the general public and the Company. Specifically, the department performs the department performs the following functions:-

(i) To effect an even proper distribution of the company's products. A Company whose market covers a wide geographical area can not distribute its products effectively from its factory. Through the network garages, customers in all parts of the country could be reached.

(ii) The after-sales back up is an important ingredients in the sale of costly equipments.

Customers have to be assured of long service life for the equipment. The extent that customers satisfactions is achieved in this area will determine his willingness to buy the product again. It will also affect the general image and demand for the product. The network

garages offer this essential service through their well equiped and staffed factory.

(iii) Breaking of bulk is an important part of distribution of goods. To (UNTL), the distributors serve as wholesalers, who buy in large quantities and resell on retail to individual customers. This saves the (company) the problem of dealing with so many customers at the same time, if they had to sell all their products to the final users.

(iv) Through strict supervision of the garages by the network field staff, these outlets are used as a monitoring post for different types of information. These information are collected and analysed for use in the formulation of future policies. Areas of interest include; product performance, customers reactions to new fabrics and modification, market survey, competitors activities, measurement and evaluation of economic and social change that may affect the market.

After-Sales Department.

The after-sales department performs the following functions:-

(i) -To develop the network nation wide i.e company distributor garages by assisting them with the following:-

-Recruitment of the key staff and advise on labour force needed in relation to the level of their industrial activities.

-Supervision and monitoring of the construction of their garages in conformity with UNTL standards.

-Assistance for the requisition of the tools and equipments.

-Supervision of the installation of their factory equipments and demonstrating training on their usage.

-Promotion of the network to achieve their potentials.

(ii) -To assist management in commercial division in appraising the adequacy of a potential distributor facilities at his disposal. Conducting feasibility studies in conjuction with other departments namely, marketing, spare parts etc, for any newly appointed distributor.

(iii) -To educate and disminate informations to the network in terms of product innovation, solution to technical problems etc. through service information leaflets, information flash, technical documentation seminars to mention but a few.

(iv) -To collect information and datas on product performance, especially newly launched products to the market and passive information to the assembly plant; to conduct research and investigation to determine the product quality, to liaise with UNTL quality

department through regular meetings on ways and means of solving short comings and improving quality products.

(v) -To supervise and co-ordinate the net work operations (economic activities of the garage) according to (UNTL) policies, norms and standards.

(vi) -To assess yearly the distributors in the after-sales potential in various fields.

(vii) -And finally, to handle customer's complaints and grievances, and to create customer's (public) awareness and enlgihtenment on their rights and obligations.

(3) Finance Divison.

This Division is headed by a General Manager who is responsible for shepherding the financial transactions required to raise the needed capital. The General Manager is assisted by an Assistant General Manager. The division is also responsible for the overall investment matters of the company's

investments in various under takings. It also explores avenues for profitable investments to be understaken and map out strategies and guide lines for such investments.

The division is divided into two major departments - finance and Budget. The finance department is headed by an AGM assisted by a Manager. The department is responsible for the procurement and disbursement of funds of the company.

The budget department on the other hand is headed by a budget controller. This department deals exclusively with management information such as the preparation and submission of quaterly management accounts, budgetary control and appraisals and recommendations of viable projects up to their implementation stage.

(4) Industrial Division.

This division is also referred to as the assembly plant. The division is primarily responsible for the production of fabrics of various types.

The division is also responsible for the co-ordination and planning of all the maintainance functions and repàirs activities of the plant.

The Division is headed by a General Manager.

There are four major departments under the industrial division. Each department is headed by an Assistant General Manager and assisted by a Manager. These departments are:- the supply: Quality: local contents and work and study methods.

The supply department is responsible for the acquisitions of the company's raw materials.

The quality control department is responsible for ensuring that local and off share (imported) raw materials for UNTL meets international standards specified. The department is also responsible for setting standards for all the company's product in order to ensure the quality of the company's various products.

This department is further divided into three(3) main production shops - namely:- the body shop, paint shop and assembly shop.

The body shop is the are of the manufacturing plant. Here, fabrics which are partly made are completed, some are wholly manufactured and the rest assembled in their pieces, following a special order of assembly and quality control.

The paint shop is where protection coats are added to the craines of the fabrics. The coats serve as an anti-corvosion base spray, anti-gravel to sealers and for other special purposes, all designed to enhance durability, wehability and beauty in whatever weather.

The local contents department is a distinct department designed to carryout (UNTL)'s solid clearly marked out objectives for the development and growth of textile industry in Nigeria. The department is mainly concerned with the development of locally made fabrics to be used the production of the company's products. The department is organised into the following units for effective performance - local purchase, overhead purchase, local content development with Research and Development (RED) Section.

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The work and study method department is responsible for identifying, appraising and recommendation of viable projects in the area of local content developments up to their implementation stage.

See the organisational chart of United Nigeria Textile Limited Kaduna (UNTL), at the Appendix.

3.4 Performance

United Nigeria Textile Limited started its industrial activities in 1975, achieving for the first year of operation an output of 2500 crates of fabrics. The year 1975 to 1982 was a period of fast market with industrial oriented by at:

(a) Increasing its production capacity up to 60,000 crates per year: and actual output achieved has been:-

1976	:	15,300
1976	:	23,500
1978	:	24,800
1979	:	34,800
1980	:	48,300
1981	:	59,500
1982	:	56,000

(b) Simultaneously developing the local manufacturing of fabrics through a network of sixty (60) industrial suppliers spread throughout the country, during the same period

above, the local contents ratio achieved in UNTL gradually increased from:-

1977 : 3%

1978 : 7%

1979 : 9%

1980 : 14%

1981 : 20.5%

1982 : 30%

From 1982, both UNTL and its industrial suppliers faced, within a necessary economic environment linked to the sudden drop in oil revenues, severed difficulties to obtain the vital licences for raw materials. During this period until 1986, the sharp reduction of outputs, from 56,000 down to 27,000 was accompanied by a sharp reduction of the local content ratio from 30% down to 9.5% as the company was left with no alternative than to reduce in the raw materials which could no longer be produced by its local suppliers due to their inability to obtain the essential imputs licences.

The introduction of SFEM later IFEM at the end of 1986, rendering some what easier and more regular the access to foreign exchange and despite the SAP environment where demand for the company's products further decreased from 1986 level, allowed UNTL, to reinitiate a local content development policy reactivating technical and business relationship with its previous or newly selected industrial suppliers. Whereas the company's output from 1987 to 1990 averaged only 7,200 vehicles per year, the total content ratio rose again gradually.

1986 : 9.5%
1987 : 15%
1988 : 22%
1989 : 29%
1990 : 32%

However, despite the present economic difficulties in the country, the company's posted nearly a turnover of ₦1.2 billion by last year. This impressive achievements which is more than 5 folds of the ₦283 turnover in 1987, is expected to rise further when the major expansion projects being

embarked upon by the company come on stream.

The company has since undertaken the practicalisation of the industrialization drive of the federal government. The company's local content integration had attained a recording breaking of 32% mark. The company has under taken an extensive implant and out plant local content projects and for the development of tooling workshop and maching operations alone, UNTL, spent almost over ₦10 million in 1989, and addition of ₦12 million last year and has budgeted ₦45 million this year for the development of more raw materials. Despite its 32% raw materials achievement, the company was not resting on its oars, and has infact set a new achievable target of 65% between now and the next five years.

To achieve this new target, the company will spend $40 million (about ₦1.4 billion) for plant/ equipments and buildings respectively to generate additional 15.56% local content in stamping, pressing and tooling, and $167 million (about ₦1.6 billion) for maching projects to generate additional 16.80% local contents. The main objectives for undertaking the aforementioned actions by the company are:-

(1) To Reduce FOREX (foreign exchange) demand;

(2) Increase industrialization both inplants and outplants.

(3) To generate enterpreneurship in the textile sector etc.

UNTL Industrial Investment Plan for 1990 - 1993.

The company intends to pursue vigorously its industrial investment plan for 1990-1993.

In 1989 and 1990; the new mixer for matching colours were developed.

This year 1992, would witness the actual innovations in UNTL of:-

(1) Making different types of fabrics with different syntetic cotton lint, they might invest ₦3.6 million.

(2) A mini cotton and wearing industry to be established in UNTL, for a total of about ₦10.7 million investment.

(3) Growing of cotton farm, to lease and finance as a resource to the proximity of raw materials for a total investment of about ₦8.8 million.

Additional total investment of ₦108 million is planned for a major project in 1991 - 1993 which consist of relocating of UNTL, as a result of the need to expand the company.

Conclusion.

This chapter has presented the historical background of United Nigeria Textile Limited Kaduna and its performance up to date. The next chapter present the capital investment evaluation and risk analysis in United Nigeria Textile Limited.

CHAPTER FOUR

CAPITAL INVESTMENT IN UNITED NIGERIA TEXTLE LIMITED KADUNA (UNTL).

DATA PRESENTATION AND ANALYSIS

The preceding chapters focussed on the introductory aspect of the study, review of relevant literature and the theoretical framework of capital investment. Also discussed is the historical background of UNTL.

This chapter will focuss on Data Presentation and Analysis.

4.1 Project Generation and Analysis

(a) Project Generation:

Investment proposals can originate at any level within the four major divisions in the company. These divisions are personnel; commercial; Finance; Industrial and the local cotton/purchase.

However, the responsibility for initiating new project is shared among these divisions as follows:-

Industrial/Local content/	
Purchase Division	= 51%
Commercial Division	= 25%
Finance Division	= 14%
Personnel Division	= 10%

(b) Uses of Project Review Committee.

Apart from the various division's project Review Committee, the company utilizes a central review committee for reviewing projects. This committee is made up of Staff Specialists of the four major divisions of the company.

The company make use of a committee to facilitate cross fertilization of ideas, taking into consideration technological, social, economic and political implications of project before huge sums of money are committed.

(c) Project Size for Formal Analysis.

The company was asked to indicate the size of projects in naira it considered for analysis.

The findings shows that most of the company's capital investment ranges from ₦100,000 upwards. Therefore, any proposed projects requiring an outlays

of at least ₦100,000 is justified to be analysed formally.

(d) Rate of Project Acceptance.

The company was further requested to indicate what percentage of projects subjected to analysis were accepted. It was indicated that at least half ($\frac{1}{2}$) of projects formally analysed were accepted.

(e) Division Responsible for Project Analysis.

The company was requested to indicate which of the four major divisions of the company is/are responsible for analyzing capital investment proposals.

It was revealed that the responsibility for analyzing capital investment proposals in (UNTL) is that of finance and industrial division.

(f) Phases of Capital Budgeting.

The capital budgeting process can be viewed as consisting of four (4) stages. These are:-

- Project defination and cashflows estimation which consists of orig nating investment proposals and f orecast ng benefits and c osts to be derived rom the project in terms of cash flows.
- Financial analysis and project se ection which involves the development of financial criterion for judging individual rojects and choosing projects that meet t ie criterion.
- Project implementations which involves appropriating funds for executing selected project.
- Project review which is a process of reviewing and controlling previously approved and initiated projects.

The company was asked to indicate which stage of the capital budgeting process it considered most difficult and critical.

The response to this question confirms that the most difficult stage of capital budgetting process as seen by UNTL, is cash flows estimation

because estimation of cash flows is prone to uncertainty. The elements that constitute the cash flows are cash generated from operation and Depreciation.

4.2 Capital Budgeting Techniques.

There are several capital budgeting techniques used for project appraisal. These are:

(1) - Non-discounted cash flow techniques which comprise.
  (a) the payback period (PBP)
  (b) the Accounting Rate of Return (ARR).

(2) - Discounted cash flow techniques which comprise:-
  (a) Net Present Value (NPV)
  (b) Internal Rate of Return (IRR)
  (c) Profitability Index/Benefit Cost Ratio (PI).

The company was asked to indicate which techniques it uses as its primary and secondary tools.

The findings shows that UNTL, predominantly uses the Discounted Cashflow Techniques (DCF) as their primary tools for project appraisal. This is because the techniques DCF are becoming more scientific in capital budgetting as they take into account the time value of money. The advent of computer technology has also made the use of these techniques popular. However, the Internal Rate of Return (IRR) was the most dominant primary technique.

Because of Risk in Capital Budgeting, pay back period (PBP) and Net Present Value (NPV) is some times used as a secondary techniques due to its simplicity in computation. The company therefore use more than one techniques for project appraisal.

4.3 Risk And Uncertainty.

As a result of changes in the environment, the company's operation are subject to both business and financial risks. Business risks the uncertainty of income flows caused by the nature of the company's business, while financial risk is uncertainty introduced by the method of financing an investment.

The company was asked as to what type of risk, the business encounteres. The finding indicates the following results.

Unfavourable economy	50%
Business Risk	30%
Financial Risk	20%

This finding clearly shows that the company is bothered more about the general economic environment in which it operates, since its performance is tied to the general economic environment. Little emphasis was given to financial risk which can affect its ability to meet their financial committment.

The company was asked to indicate whether it explictly consider risk and uncertainty in capital budgeting.

The response was in affirmative.

The company was further asked to indicate whether it classifies projects into risk classes and whether different types of capital budgeting techniques are used for project in different risk classes.

The answer was possitive, indicating that the company classifies project into risk classes and some times uses different type of capital budgeting techniques for project in different risk classes.

Adjusting Risk and Uncertainty.

There are several techniques a company can use to make adjustment for risky situations. The techniques for adjusting risk situations include:-

(a) - Adjusting the rate of return upward,
(b) - Decreasing the payback period,
(c) - Certainty equivalent of cash flows,
(d) - Sensitivity analysis.

The company was asked to indicate which of the four possible techniques it uses to adjust for risk and uncertainty. The company indicated that it adjusted for risk and uncertainty by decresing the payback period of any investment proposals.

4.4 Cost of Capital:

Three questions were included in the questionnaire to test whether the company has a thorough knowledge of the concept of cost of capital.

The first question was designed to test on what basis the company determines its cost of capital for evaluating projects.

UNTL mostly used interest on loans as a basis for determining its cost of capital for project evaluation.

The company has a misconception about the basis for determining the cost of capital. The basis for determining the cost of capital should be the weighted Average cost of capital should be the weighted average cost of capital (WACC) which comprises the cost of the various components of financing weighted in the proportions they occur in the firm's capital structure. Even if additional funds are raised through Debentures to finance a project, the cost of capital (COC) should be based on the marginal cost. The Marginal Cost of Capital

represent the average cost of new, or incremental funds raised by the company.

The company was further asked whether it had a fixed cost of capital for project acceptance.

It was found that the company has a separate cost of capital for project because of the cost of capital variation from period to period due to capital market imperfection as the company obtains additional financing. However, the cost of capital could be fairly constant if there are no new additional funds, and if the projects have the same degree of risk (using the cost of capital (COC) as the hundle rate).

4.5 Capital Rationing:

Capital rationing is a condition where a firm is constrained by external or self-imposed reasons to obtain additional funds to invest in all profitable projects.

Capital rationing may arise due to:

(1) External factors arising from imperfections in capital markets.

(2) Internal constraints imposed by management.

In order to optimize its investment policy, a firm should accept all profitable projects. However, in a situation of insufficient funds it will be impossible for the firm to accept all profitable projects, and consequently the firm will have to sacrifice some profitable investment proposals, Under capital rationing, a firm may be compelled to reject project which would earn more than the real cost of capital of the firm, and consequently the investment policy of the firm will be less than optimal. It become necessary therefore to find out whether United Nigeria Textile Limited operated under a capital rationing environment.

It was confirmed from the research that the company operate in a capital rationing environment in which it attempt to alocate a fixed budget on a competitive basis.

In a capital rationing situation where there are many profitable projects, the company was

requested to indicate its likely course of actions. The company decides to execute projects in order of priority.

In order to maximise the market value, it is necessary for a company to accept all profitable projects and raise funds till the rate of return becomes equal to the cost of capital. When the company is constrained to accept all profitable project, the company would not be able to earn maximum wealth and consequently the market value per share will not be maximised.

Causes of Capital Rationing:

Capital rationing may arise due to:

(a) External factors or

(b) Internal constraints imposed by management.

External capital rationing is due to imperfections in capital markets which makes it impossible for firms to obtain the necessary capital for financing profitable investments.

Internal capital rationing is caused by self-imposed restriction by management. Restrictions may be inform of refusing additional capital through debt financing, limiting expenditures or stipulating the projects for acceptance must have a rate of return higher than the cost of capital (COC).

The company was asked to indicate the major cause of capital rationing in their investment decisions.

The major cause of capital rationing in the company are two.

These are:-

(1) Debt limit placed by the management external to the company - i.e the other textile companies.

(2) Limit placed on borrowing by the internal management of the company in order to maintain a target earning per share.

4.6 Inflation:

Inflation refers to a situation "when the value of money is declining; that is when prices are rising but changes in the money supply, however, may or may not affect price."

Inflation distorts capital budgetting decisions at it makes cash flow forecast unrealistic and affects the prices of inputs and output associated with a project. Consequently, in estimating cash flows, it is important to take account of anticipated inflation, otherwise a bias arises and there is a tendency to reject some projects that should be accepted.

There are several methods of incorporating inflation into a project appraisals. The most commonly recommended method is to estimate cash flows at present day prices; yet another method is to calculate real interest rate and then use it to discount the real returns, or the nominal return could be discounted with the nominal rate of interest.

Because of the impact of inflation on capital budgeting decisions, the company was asked to indicate whether or not in accounted for inflation.

The findings shows that the company accounted for inflation in its capital budgeting decisions.. The company uses the most commonly recommended method i.e estimating the cash flows at present day prices.

4.7 Project Abandonment:

The goal of the firm in selecting projects and in subsequently deciding to hold or abandon them is to maximise the discounted present value (PV) of the firm. A project that continues to make its required rate of return will continue to receive further cash outlays. However, funds should be removed from a project whenever the project does not economically justify the use of these funds. In general, an investment should be abandoned when its abandonment value exceeds the value of the project's subsequent expected future cash flows, discounted at the cost of capital rate.

The company was asked to indicate whether it has abandoned any capital project or projects, since its inception. And if it has, what are the major reasons for such projects or projects abandonment.

The response shows that the company has never abandoned any capital project or projects since its inception.

However, some of the reasons given by firms for abandoning capital projects includes:-

(1) Insufficient funds.

(2) Economic depressions resulting in lack of inputs for the completion of such projects and

(3) Unviability of such projects in the long-run etc.

4.8 Problems Encountered by (UNTL) During Capital Budgeting:

Some of the difficulties encountered by UNTL during capital budgeting decisions include:-

(i) Financial Constraints:

The banks are not encouraging investments in the industry. The rate of interest chargeable are not attractive and nobody seems to bother to accomodate the long-term nature of industrial investments and returns.

For example, one of UNTL's local content investors, Kaduna Textile Limited (KTL) battled unsuccessfully for two years despite UNTL's support to get bank financing. The project was envisaged to be 100% localised from the one set of production.

For UNTL itself, the experience is that it took the company one year to raise a loan of ₦6.5m to finance their inplant local content programme that includes tie and die section: a company with an annual turnover of ₦600m and asset base of ₦1.06b. The example spotlight the difficulties encountered by potential enterprenuers who wish to join hands with the company in developing local content projects for the Nigerian economy.

(ii) Environment:-

Local industries suffer from a remarkable deficiency in the supply of vital but basic public utility Services-Electricity, telecommunication; water supply, public goods carriage transportation (e.g. railway) e.t.c.

The provision of alternative infastructure by companies in order to contain these deficiencies is not only time and resource consuming but diversionary and highly expensive. It could be quite discouraging to new investments. This is also the cause of delays in the launching of the company's local content projects.

This highlights the company's difficulties in recruiting or convincing investors to invest in industrial not fits. They do not understand why they should invest in machines and tools that can be put to industrial use because of the failure of public utilities to provide the services for which they have been set up.

(iii) Foreign Exchange:

Since the introduction of Structural Adjustment Programme (SAP), the ability of UNTL and indeed manufacturers to have adequate foreign exchange supply has remarkably diminished. With their utilization of autonomous funds, prices have increased in direct proportion to the quantity and high rate at which the funds are purchased.

The general consequences of insufficient foreign exchange are lack of sufficient production volume, cancellation of projects, higher cost and frequent factory shut downs.

(iv) Raw Materials:

The company's most capital projects require adequate information on its raw material sources. However, informations on which the company would base their planning for raw material development hardly exist and where they exist, they are quite

unreliable. It is difficult to have information on which for example Iron and Steel and certain petrochemical products would be locally produced by state sponsored industrial outfits. Basic raw materials are the base of industrial development.

Industrial facilities like foundaries suitable for the use of textile industries are non existent. In addition, the present custom tarrif structures are not favourable for the development of raw materials within Nigeria for the textile industries. The custom tarrif are high-ranging from 20% to 70% for raw materials imported for use locally to manufacture fabrics.

(v) Getting Proposal Accepted by Other Textile Companies in Nigeria.

Decision making for the company tends to be centralized. Key decision involving the company's activities in area of production and marketing facilities and long-range planning tends to emanate from other textile industries in Nigeria.

(vi) Finally, is the company's inability to estimate the exact inflation rates, risk and uncertainty; and the cost of capital to be used in project evaluations.

Conclusion:

The chapter has presented the findings of the survey of capital investment practices in United Nigeria Textile Limited, Kaduna. The next chapter summaries the findings of capital investments practises by United Nigeria Textile Limited, Kaduna and offer some suggestions.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATION.

5.1 Summary:

One of the most important functions of financial management is the efficient allocation of capital. This is done with a view of maximising the wealth of the firm-vis-a-vis the market values of the firm's shares or stocks. Thus the major role of capital budgeting is to maximise the market value of its shares by investing in profitable projects.

Capital Budgeting is concerned with the allocations of saare resources between alternative uses so as to attain objectives. It is a decision which involves current outlays in return for expectations of future decision. Generally, this will include addition, dispositions, modification and replacement of long term of fixed assets. It also includes mechanisation of a process, introducing new products and expanding the business. Such decisions are necessary not only to increase profits, but also to ensure efficiency in operations,

more along with operational innovations, like the local sourcing of raw materials, self sufficiency, ability on the part of the company to keep its position of the market and growth.

Capital Budgeting Theory therefore seeks to provide a body of analysis giving answers to the following four (4) questions.

(i) What specific investment projects should a company accept,

(ii) What total amount of capital expenditure should the company under take;

(iii) How should this portfolio of projects be financed.

(iv) How can the company maximise profitability from exisint and proposed committments.

The detailed capital budgeting procedures and process obtainable in an organization will as a matter of necessity, differ from one company to the other inresponse to the peculiar needs and nature of each business. These apparent differences not

withstanding, there are certain features by which an efficient. System of capital budgeting can be identified. These features are often referred to as "capital budgeting process" which consist of four (4) important steps. These steps are project selection, project implementation and project review.

These steps are necessary but more may be added to make the process more effective. The nature of the formal system for capital budgeting process depend's on the size of the company and the nature of projects and their number; complexity and diversity. It can be well appreciated that the capital investment process is one of the most significant decision area since the expenditures involved are large; affects the firm's operations and are generally irreversible.

Therefore, capital expenditures decisions are among the class of decision which are best level of management. This implies that substantial part of this process should be confined to the top management, and if some parts of its are delegated, a system of effective control by the top management be evolved.

Because of the utmost importance of capital investment decisions a sound appraisal method should be adopted to ensure the economic worth of each investment project. The investment evaluation criteron should at least possess the following characteristics:

(i) Provides a means of distinguishing between acceptance and non-acceptance projects;

(ii) Provide a ranking of project inorder of desirability;

(iii) Be applicable to any concievable project;

(iv) Recorgnises that bigger benefits or earlier benefits are more preferable.

There are a number of investment criteria in use, but the most widely accepted criteria can be grouped into:-

(1) Non-discounted cash flow techniques:

(a) Payback period (PBP)

(b) Accounting Rate of Return (ARR).

(2) Discounted Cash Flow Techniques:

(a) Net Present Value (NPV)

(b) Internal Rate of Return (IRR)

(c) Profitability Index (PI).

Different firms may use different method, and which method, and which method is appropriate for a particular firm depends upon the circumstances. The number of techniques used by a company depends on its sizes and needs. However, to avoid confusion, some method(s) or methods should be used uniformly for every project through out the company. Though these techniques help in making decisions objectively, the management must still exercise their common sense and judgement in making decisions.

Summary of Findings:

The following are the findings from the study:-

(1) The responsibility for initiating new projects is shared among the major divisions of the company as follows:-

Industrial division	51%
Commercial division	25%
Finance division	14%
Personnel division	10%

(2) (a) - The company makes use of central review committee for project analysis. This committee is made up of the top management of the company.

(b) - Most of the company's investments that require formal analysis ranges from ₦100,000, and above. And at least half of the projects formally analysed by the company are accepted.

(c) - The responsibility for analyzing capital projects in that of finance and local content divisions.

(d) - The most difficult stage of capital investment decisions from the company's experience is project definition.

(3) (a) - The business of the company encounters risk in the following proportions:-

- Unfavourable economy 50%
- Business risk 30%
- Financial risk 20%

(b) - The company account for risk and uncertainty in its capital budgeting decision. This is done by decreasing the payback period (PBP).

(c) - The company uses interest on loan as it cost of capital for evaluating any projects.

(d) - Because of capital market imperfection, the company use a seperate cost of capital for evaluating each project because of interest rate variation from time to time.

(4) The company operate in a capital rationing environment and the major cause of capital rationing are:-

(i) Debt limit placed by the other companies i.e Kaduna Textile Limited.

(ii) Limit placed on borrowing by the Internal Management.

(5) The company accounted for inflation in capital investment by estimating cash flows at present day prices.

(6) The company has never abandoned any project since its inception.

(7) The difficulties encountered by the company during capital investment decisions include:-

(i) Getting proposals accepted by the other companies.

(ii) The company's inability to estimate the exact rate of inflation, risk and uncertainty.

(iii) Scarcity of foreign exchange.

(iv) Problems within the company's immediate environment.

5.2 Conclusions:

During the last eight (8) years, alot of investment activities have taken place in UNTL. Most of these investments are in the areas of local content developments, machineries and constructions. However, plans are underway to under take more investments in the area of local contents developments.

The primary objective of this study was therefore to determine to what extent the company uses modern capital budgeting techniques in making such capital investment decisions.

The findings and recommendations of this study will however be helpful to the company in its future investment decisions in order to allocate the resources of the company more effectively and efficiently, so that the market values of the company's shares can be maximised.

vis-a-vis the wealths of the company.

Based on the questionnaire answered from the Budgeting and Management Accounting Department, the following conclusions are reached.

(1) The company is making use of the many tools of analysis presented in the financial theory for analyzing capital budgeting projects.

(2) The project appraisal techniques used by the company fall into two broad categories - discounted and non-discounted cash flow techniques. . The most predominant appraisal technique in primary usage is the internal rate of return (IRR) techniques, while the Net Present Value (NPV) and pay back period (PBP) techniques dominated as secondary techniques.

(3) The company take account of risk in capital investment decisions. Projects are classified into risk classes and different techniques of capital budgeting used for project in different risk classes.

Inflation is taken into consideration by incorporating inflation rates into cash flow estimates and by making an allowance for price variation during contract or execution.

(4) The most difficult stage of the capital budgeting process is project defination and cash flow estimation, while the major cause of capital rationing is limit placed on borrowing by management of the economy.

(5) The company seem not to have understood the concept of Weighted Average Cost of Capital (WACC), as it used interest on loan (i.e. the borrowing rate) as it cost of capital. The company's cash flow elements are cash generated from operations and depreciations.

5.3 Recommendations:

The recommendations are based on the difficulties encountered during capital budgeting decisions as well as some lapses found in the capital investment practices of the company as revealed by the budgeting and management accounting department of the company.

(1) The operations and decisions of the company is subject to environmental variables which include changes in

the economy; competitions; technological changes; governmental interferences all of which bring opportunities and constraints for the company. These factors give rise to risk and uncertainty in capital investments which make it doubtful whether the company could achieve future expectations, interms of revenue, costs and economic life of a particular investment.

As much as the environmental variables are beyond the control of the company, the survival of the company depends on its ability to make long range forecasts of these factors in order to reduce the impact of risk and uncertainty in the operation of the company. The company can use the forecasting technique of input and output analysis.

(2) Apart from the make long range forecats, the company should also continously asses their internal enviroment, before embarking

on capital projects. The internal environment refers to the company's resources such as financial resources, knowledge/skill facilities, manpower and management ability all of which are essentials in successful execution of projects.

(3) The Government can further encourage more investment in textile industry by taking the following actions:-

(i) Ensuring that projects of high national interest or raw material developments should attract special grants or loans at concessionary interest rates and promptly.

(ii) In the area of infrastructures and public utilities, definite efforts should be made to save industries from their stranglehold.

(iii) In the area of imports, the Central Bank of Nigeria should consider issuing a guideline to grant specific percentage

of FEM funds to Manufacturers.

(iv) The custom tarrif should be reviewed for raw materials imported for use locally.

(v) Finally, the Government should as a matter of urgency instruct the research institutes to look into the possibility of developing local industrial facilities like cotton and wool plant industry and local substitudes for imported raw materials in general.

(4) Training is recommended for the company as this will enable the managers/accountants involve in capital budgeting process improve on their understanding and implications of their decisions.

(5) The present situation in which the company is expected to get oversea parent to approve project proposals should be reviewed.

(6) (a) The approach for computing the cost of capital "is the Weighted Average Cost of Capital (WACC) where the weights or proportions of each element of capital is multiplied by its costs and the weighted costs are added together."

"The set of weights theoretically correct to be used are incremental weights are the financial managers estimate of the proportion of a new capital to be raised over the planning period."

The cost of capital should be determined on an after tax basis.

(b) The company should pay equal attention to the variability in their operating income as a result of business risk as well as in its ability to fulfil financial obligations as a result of financial risk. Provisions should be made for risk and uncertainty as risk affects the returns on investment.

(c) Since different types of projects have systematically different degree of risk, projects should be classified into risk classes and the company should vary their hurdle rates for accepting projects with different degree of risk.

(7) The company should take account of inflation in forecasting cash flows frompprojects. This is because inflation affects the prices of inputs and outputs to be used for project execution. Inflation also renders cash flow estimates unrealistic. Inflation can be estimated by averaging published forecasts economists. Inflation can also be estimated by extrapolation techniques or more sophisticated forecasting prodedures, using data available on price increases - consumer and whole sale prices in aggregate by products and commodities and average wage increases.

(8) In a capital rationing situation with mutually exclusive projects, the company should select a combination of the most profitable projects

using capital budgeting techniques as the use of executive or execution of projects in order of priority will only lead to sub optimal investment decisions.

Since the objective of the company is to maximise the market value per share, it should accept all profitable projects and raise funds till the rate of return equals to the cost of capital. If the company reject projects which would earn more than the real cost of capital, it would have a less than optimum investment decisions.

(9) Finally, even though, the company has not abandoned any project since its inception, the company should incorporate abandonment option in their capital budgeting process in order to ensure that capital is optionally allocated within the company.

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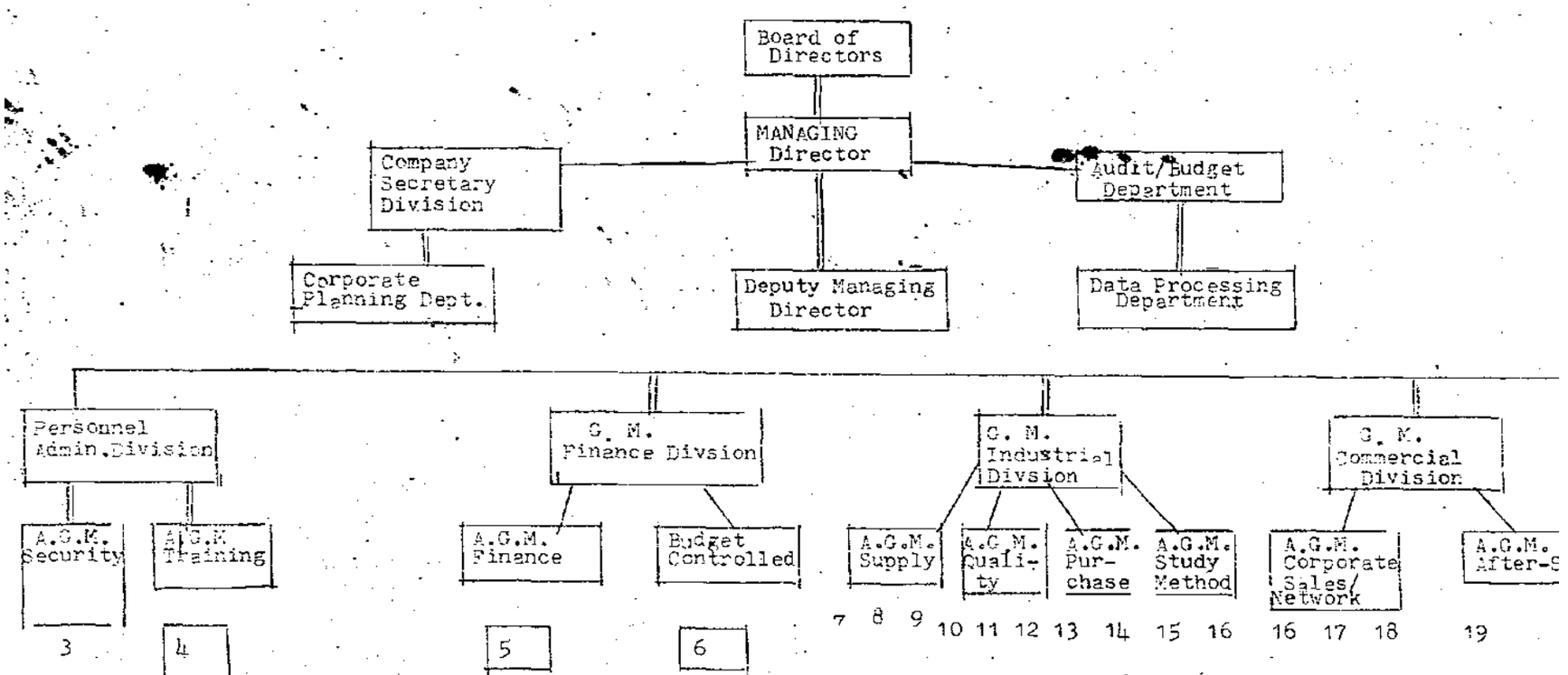
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ORGANISATIONAL STRUCTURE OF UNITED NIGERIA TEXTLE LIMITED KADUNA.



APPENDIX

Questionnaire

Dept. of Business Admin,
Institute of Administration,
Ahmadu Bello University,
Zaria.

15th September, 1992.

Dear Sir/Madam,

M.B.A. PROJECT 1992

I am undertaking a research topic: "A Critical Analysis of Capital Investment Decisions by Manufacturing Companies: A Case Study of United Nigeria Textile Limited Kaduna. Your Company has been chosen as a Case Study in view of the number of Capital Investments undertaken in recent times.

I shall appreciate if you kindly complete this questionnaire. I promise that the information supplied will be treated confidentially.

Yours sincerely,

OYIDI OLUSHOLA JAYNE.

PART B

(5) How is the idea for new projects development?

(a) Recommendation of Research and Development. ☐

(b) Management Consultant Recommendation ☐

(c) Board of Management Suggestion ☐

(d) Through the Market Research Department ☐

(6) Does your company have a Central Review Committee for Appraisals of Projects? ☐ Yes ☐ No.

(7) What is the average size of Projects that need to be formally analysed?

(a) - Above ₦20,000.00 ☐

(b) - Above ₦50,000.00 ☐

(c) - Above ₦100,000.00 ☐

(d) - Above ₦500,000.00 ☐

(8) Of the total number of projects that are formally analyzed, what percentage are accepted?

(a) - less thatn 10% ☐

(b) - 10% to 25% ☐

(c) - 25% to 50% ☐

(d) - 50% to 75% ☐

(e) - 75% to 90% ☐

(f) - More than 90% ☐

(9) Which Division(s) has the responsibility for analyzing Capital Projects?

(a) - Finance ☐

(b) - Commercial ☐

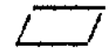
(c) - Personnel/Administration ☐

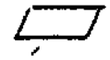
(d) - Industrial/Local Content ☐

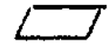
(e) - Others (Specify) _____

(10) Which stage of the Capital Investment do you find the most difficult.

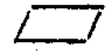
(a) Project defination and cash flow estimation ☐

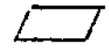
(b) Financial Analysis and Project Selection 

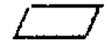
(c) Project Implementation 

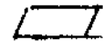
(d) Project Execution & Review 

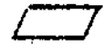
(11) Of the following Capital Budgeting Techniques, place an "A" by the primary techniques and "B" by the Secondary Technique you currently use.

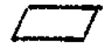
(a) Accounting rate of return 

(b) Pay Back Period 

(c) Internal rate of return 

(d) Net Present Value 

(e) Profitability Index 

(f) Others (Specify) 

PART C:

12. Do you explictly consider risk and uncertainty in the analysis of capital projects ☐ Yes ☐ No.

13. Do you classify projects into risk classes ? ☐ Yes ☐ No.

14. Do you use different types of Capital Budgeting Techniques for different classes of risk ☐ Yes ☐ No.

15. Which of the following methods do you use to adjust for risk uncertainty?

(a) Increase the required rate ☐

(b) Decrease Pay Back Period ☐

(c) Certainty Equivalent ☐

(d) Use Sensitivity Analysis ☐

(e) Others (please specify) ☐

16. What do you regard as your cost of capital or financing?

(a) Weighted Average Cost of Capital ☐

(b) Investment on Loan ☐

(c) Opportunity Cost ☐

(d) Cost of equity ☐

(e) Others (Specify) ☐

17. In Evaluating Project, for acceptance, do you have a fixed cost of capital serving as a cut-off point.

☐ Yes ☐ No

18. What do you do in a situation where you have many profitable projects but do not have enough funds to execute all of them?

.. ..

19. What do you consider as the major cause of capital rationing in your company?

(a) Debt limit imposed by an outside agreement ☐

(b) Limit placed on management external to the company ☐

(c) Limit placed on borrowing by Internal Management ▱

(d) Restrictive Policy Imposed on retained earnings for dividend pay out ▱

(e) Maintenance of a target earnings per shares ▱

(f) Others ▱

PART E

20. Do you consider inflation when Analysing Projects? ▱ Yes ▱ No.

21. If Yes, how do you account for inflation in Capital Investment?.. .. ..
.. ..

22. Have you ever started projects, which you later abandoned? ▱ Yes ▱ No.

23. If Yes, Why?______________________________

24. Do you later continue with such projects?

▱ Yes ▱ No.

25. If Yes, do you evaluate such Project?_____

_____

26. What difficulties do your company encounter during capital budgeting decision?_____

_____