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ASSIGNMENT ON

AGRIBUSINESS MANAGEMENT (AEC 813)

**Financial Analysis, Scope and Methods of Financial Management,
Planning and Control in Agribusiness.**

Capital Budgeting Techniques.

Investment Decision under Uncertainty.

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Title Page	i
Table of Contents	ii
INTRODUCTION	1
1.2 Scope of Agribusiness	2
1.2 Financial Analysis in Agribusiness Management	4
1.2.1 Corporate Finance and Investment Finance	5
1.3 Planning and Control in Agribusiness	6
1.4 Methods of Financial Management In Agribusiness	9
1.4.1 Balance Sheet or Net worth Statement	10
1.4.2 Income Statement or Profit and Loss Statement	11
1.4.3 Cash Flow Statement	12
1.4.4 Break-Even Analysis	13
2.0 Capital Budgeting Techniques	18
2.1.1 Methods of Capital Budgeting	19
2.1.2 Need for Capital Budgeting	19
2.1.3 The Internal Rate of Return Method	19
2.1.4 The Payback Period Method	21
2.1.5 The Net Present Value Method	23
3.0 Investment under Uncertainty	25
Reference	26

1.1 INTRODUCTION

Agribusiness is a large and growing segment of any particular rural economy. In Nigeria, the agribusiness operations need adequate planning, production management, and marketing beyond those of conventional farming systems. Agribusiness describes all economic activities that involve the distribution and or transformation of the raw materials that are from agricultural sector and non-agricultural sector; whose final products could be used for agricultural purposes and agro-allied enterprises. Agricultural business refers to a set of farm business and management activities that involve the production of food, provision of agricultural products within and outside a country. Agricultural business also embodies wood and plant production all other forestry activities including fisheries. David and Goldberg(1987) in his definition perceived agribusiness to mean the sum total of all operations involved in the production of enterprises on the farm, the manufacturing and distribution of farm supplies and the equalization as well as dispersion services(such as storage, processing, standardization, grading, pricking, transportation and distribution)of farm products. Agribusiness can therefore operate as formal and non-formal levels depending on the desired goals of its originator. The characteristics of this economic sector in Nigeria are fast changing especially with the current move towards more certification of some of the component fields of agriculture.

1.2 Scope of Agribusiness

Agribusiness is a large and diverse sector that witness economics activities that ranges from culturing, processing, extracting and distribution. Ebong (2007) in his review of the scope of the agribusiness, perceived agricultural business in three independent sectors, which are the Input sector, the Farm Production, and the Output (product) sector

Input Sector: this includes all resources that serve as building units that are required to service a transformation process in order to achieve one or more products. The input sector supplies agribusiness production with the needed inputs in the production process. The cost of acquisition of inputs has influence on the financial health of the input sector which directly impact on the wellbeing of the production sector in general. As inputs prices increase and farm income remains relatively stable, producers will reduce their utilization of the more expensive inputs and substitute other resources inputs for them. This is termed production substitution effect, for instance, if the more expensive inputs is machinery, farm form will use less of it and substitute manual labour for it. This explains the downward sloping nature of the demand curve for tractors of agricultural production. The farm firm business covers such areas as Agrochemical input supplies e.g fuel, fertilizer, pesticides, herbicides and veterinary, feed machinery and equipment supplies e.g tractor wheel barrow, spade, matches, tyres etc., agricultural Financing from formal and non-formal sources and labour supplies both skilled and unskilled.

Farm Production Sector: the farm production sector of agribusiness covers such areas as the aquaculture, forestry, crop production and livestock. As this sector grows in size, level of output and efficiency, the other sectors of agribusiness are affected. The success of this sector has a vital and direct impact on the financial stand of the input supply and the product sectors of the agribusiness. The increase in the scale of production leads to more of the output being made available to the product sector for onward processing and distribution. As farm prices remain fairly stable expenses increase, pressure is exerted on farmers, firms and ranchers to improve efficiency. Today the cost price squeeze is so serious that producers are unable to cut cost or improve production efficiency to the extent necessary to deal with the problem. This explains why small farms continue to cut down production while larger farms become larger.

Output Sector: accepts diverse economic activities that could be directly identified within the agriculture domain or from a related field which is otherwise called agro-allied sector. The output sector is also referred to as the product sector and is the final sector in agribusiness production and distribution system. The output sector is the largest of the agribusiness sectors as its functions range from product processing to marketing and distribution of these products to various consumers either as raw materials for further production or final consumption. Notable examples of the product processing include, Food processing into garri, bread, cornflakes, tomato paste, beef, custard, semovita, cerelac etc Beverage manufacturing: cocoa drinks, soft drinks, beer and Nescafe. Confectionery processing such as sugar, chocolate, cake, biscuits, sweets, etc. Food packaging and canning such as tomato can, beef can, beans and other quality foods. Tobacco processing into snuff and treated leaves, cigarettes etc., wood processing and furniture making, Cotton processing into textiles, hide and skin processing

example smoked, canned and frozen fish. Another important function of the product sector is the marketing and distribution of the outputs from the production sector and the processed products to final consumers. This function is performed by the middlemen who include wholesalers, the producers/processors/manufacturers themselves, retailers and commodity board and cooperatives agents. The importance of this sector can be further highlighted by showing that even when food is abundant, faulty handling and distribution can make it unavailable to the consumers and therefore result in food and nutritional insecurity.

1.2 Financial Analysis in Agribusiness Management

Financial analysis is the process of evaluating businesses, projects, [budgets](#) and other finance-related entities to determine their performance and suitability. Typically, financial analysis is used to analyze whether an entity is stable, solvent, liquid or profitable enough to warrant a monetary investment. When looking at a specific company, a financial analyst conducts analysis by focusing on the income, balance sheet and cash flow statement.

Financial analysis is used to evaluate economic trends, set financial policy, build long-term plans for business activity, and identify projects or companies for investment. This is done through the synthesis of financial numbers and data. One of the most common ways to analyze financial data is to calculate ratios from the data to compare against those of other companies or against the company's own historical performance. For example, [return on assets](#) (ROA) is a common ratio used to determine how efficient a company is at using its assets and as a measure of profitability. This ratio could be calculated for several similar companies and compared as part of a larger analysis.

1.2.1 Corporate Finance and Investment Finance

Financial analysis can be conducted in both corporate finance and investment finance settings. In corporate finance, the analysis is conducted internally, using such ratios as net present value (NPV) and internal rate of return (IRR) to find projects worth executing. A key area of corporate financial analysis involves extrapolating a company's past performance, such as gross revenue or profit margin, into an estimate of the company's future performance. This allows the business to forecast budgets and make decisions based on past trends, such as inventory levels.

In investment finance, an outside financial analyst conducts financial analysis for investment purposes. Analysts can either conduct a top-down or bottom-up investment approach. A top-down approach first looks for macroeconomic opportunities, such as high-performing sectors, and then drills down to find the best companies within that sector. A bottom-up approach, on the other hand, looks at a specific company and conducts similar ratio analysis to corporate financial analysis, looking at past performance and expected future performance as investment indicators.

Investment analysis is a broad term that encompasses many different aspects of investing. It can include analyzing past returns to make predictions about future returns, selecting the type of investment vehicle that is best for an investor's needs or evaluating securities such as stocks and bonds for valuation and investor specificity. Investment analysis can help determine how an investment is likely to perform and how suitable it is for a given investor. It is a

key to any sound portfolio management strategy. Investors who are not comfortable doing their own investment analysis can seek professional advice from a financial advisor or other financial professional. Investment analysis can also involve evaluating past investment decisions in terms of the thought process that went into making them, how the decision affected a portfolio's performance and how mistakes can be regarded and corrected. Key factors in investment analysis include entry price, expected [time horizon](#) and reasons for making the decision at the time.

In conducting an investment analysis of a mutual fund, an investor looks at factors such as how the fund has performed compared to its benchmark. The investor can also compare the fund's performance, expense ratio, management stability, sector weighting, and style and assets allocation to similar funds. Investment goals should always be considered when analyzing an investment; one size does not always fit all, and highest returns regardless of risk are not always the goal.

1.3 Planning and Control in Agribusiness

A business plan allows you to create a business operation on paper and manipulate and evaluate scenarios without the risk of investing a lot of time and money. Dry run planning reduces the possibility of the venture failing, by identifying your proposals, strengths and weaknesses, and developing a plan of action to cope with them.

Agribusiness Marketing Plan

A major aspect of any business plan is the section dealing with marketing. Marketing is the process of understanding the customer's needs, producing a

product to meet those particular needs, and making a profit for the business. If you are planning to start a new business or expand an existing one, it is essential to prepare a "marketing strategy". The target market must be well defined before any action is taken on production. There is little sense in going through the steps of producing a product only to find out after the fact that there is a limited or no market for that product or service.

A marketing plan outlines what you will produce, who you will produce for, how you will get customers to buy your product, and how you will get the product to them when they want it. Marketing lays the foundation for all other business planning.

Human Resources Plan

Depending on your area of production, labour expense may be among the highest costs your business will incur in any given year. Labour is usually the most difficult cost item to manage. At the same time, a good job of managing your labour force can reward you with improved productivity, higher profits, and more job satisfaction than is possible from any other cost item. Therefore, some time spent preparing a plan outlining your labour requirements, wage scales, and incentive and discipline policies will help relieve some of the inherent stress. It will provide a clear understanding of everyone's position, responsibilities, and contributions to the benefit of your business and all concerned.

If you do not hire labour, but have all your labour needs supplied from within your own family, you may feel this is an unnecessary step. However, it may actually be even more important. If you and a hired labourer do not work together well, it is relatively easy to deal with. Family labour difficulties can have much more damaging effects.

The labour plan should outline the organizational structure of your business (the line of command) the skills required, the skills available, training needs, individual employee responsibilities, employee development, compensation and benefits, and control and motivation. Labour is usually one of the largest expenses a company will have and also the hardest to control. Human resource planning allows you to manage this variable resource.

Production Plan

The Marketing Plan tells you what you are going to produce and how you will get it to market. The Human Resources Plan indicates the labour supply available to your business. The Financial Plan indicates how you will finance the venture. The Production Plan indicates the process and resources required to produce your products and deliver your services.

The production plan provides the details of how production will take place. It will specify the capital resources required for production and all of the implications related to acquiring the resources including costs, regulations, construction schedules and environmental consequences.

This is followed by details of how these resources will be used in the production process along with the production schedules.

Financial Plan

In most cases, a new business or major changes to an existing business will require financing. Lenders are essentially making an investment in your business with the expectation of a return on their investment, i.e., the interest paid. It should be recognized that these lenders are not only investing in your business, but also that they are investing in your ability to carry out your business plan. It is well worth viewing your business plan as if you were the creditor. Your creditor does not know you nearly as well as you know yourself. He or she will require good quality

information in order to make a sound decision regarding the credit worthiness of your business proposal. If you are not clear in presenting your plans and expectations, then the creditor will look upon your proposal with apprehension.

You are investing a great deal of time, effort, and money in a business venture which always has its inherent risks. If you consider that over one-third of all new businesses fail within the first three years of operation, then you will also recognize that a thorough business plan is a must. If you are not thorough in your planning and preparation, then you will very likely become part of that statistic.

The financial plan provides some level of assurance that the business is financially feasible. The marketing, production and human resources plans provide the supporting information for the financial plan. Although the financial plan is the last of the four main components of the business plan to be completed, the financial planning process is involved throughout the business planning process to evaluate the feasibility of marketing, production, and human resource decisions.

1.4 Methods of Financial Management In Agribusiness

Every farm financial manager has to assess the performance of his business in order to act suitably. various tools of financial analysis, such as balance sheet, income statement, cash flow statement, break-even analysis, etc, are available to him in this regard,(Subba Reddy *et al* 2009). Financial statements represent a formal record of the financial activities of an entity. These are written reports that quantify the financial strength, performance and liquidity of a company. Financial Statements reflect the financial effects of business transactions and events on the entity.

The four main types of financial statements are:

Balance Sheet or Net worth Statement

Income Statement or Profit and Loss Statement.

Cash Flow Statement.

Break-Even Analysis.

1.4.1 Balance Sheet or Net worth Statement

Statement of Financial Position, also known as the Balance Sheet, presents the financial position of an entity at a given date. The balance sheet can be easily prepared by the farmer in the presence of farm records. It can be prepared at any point in time to know the financial position of the farm or to study the performance of the farm over years by preparing same number of balance sheets.

It is comprised of the following three elements

Assets: Something a business owns or controls (e.g. cash, inventory, plant and machinery, etc).

Assets are of three types which include the following:

Current Assets: current assets are very liquid or short term assets which can be converted in cash at any time, usually a year period such as cash at hand, agricultural goods ready for disposal, etc.

Intermediate or Working Assets: these are less liquid than the current assets. Examples here include machinery, tractors, livestock, etc.

Long-term Assets or Fixed Assets: this comprises of assets that will be used permanently or continuously for several years which takes longer time to convert into cash due to legal transactions and verification of records such as land, farm buildings, etc

Liabilities: Something a business owes to someone (e.g. creditors, bank loans, etc). This includes:

Current liabilities: these include debts that must be paid in the short term or in a near future such as crop loans, hand loans, etc.

Intermediate liabilities: these are loans due for repayment within a period of two to five years such as livestock loans, machinery loans, etc.

Long-term liabilities: these are debts or loans due for repayment within five or more years such as land development loans, tractor loan, etc.

Test Ratios: A test ratio is used to analyze the exact position and stability of the farm business. This represents the amount of capital that remains in the business after its assets are used to pay off its outstanding liabilities. Equity therefore represents the difference between the assets and liabilities. The ratios employed here includes; current ratio, intermediate ratio, net capital ratio, quick ratio, current liability ratio, debt-equity ratio and equity-value ratio.

1.4.2 Income Statement or Profit and Loss Statement

Income Statement, also known as the profit and loss statement, reports the company's financial performance in terms of net profit or loss over a specified period. The advantages of this statement is that it indicates the trend in various cost items and whether there has been any over expenditure on the farm, it also

helps to know the success or failure of the farm business over time. Income Statement is composed of the following two elements:

Receipts: receipts here mean the return obtained from sales of farm produce and other supplementary products like wages, gifts, etc. appreciation in the value of assets is also added in the receipts. Returns from sales of capital assets like livestock, machinery are not added because such income is not really obtained during the period.

Expenses: here operation and fixed cost are recorded. A loss in the form of depreciation on asset value is recorded under expenditure item. An expense on the purchase of capital assets is not considered.

Income statement helps to ascertain the gross profit and net profit of the concern. Gross profit is determined by preparation of trading or manufacturing account and net profit is determined by preparation of profit and loss account.

1.4.3 Cash Flow Statement

Cash flow statement is a statement which shows the sources of cash inflow and uses of cash out-flow of the farm business concern during a particular period of time. It is the statement, which involves only short-term financial position of the business concern. Cash flow statement provides a summary of operating, investment and financing cash flows and reconciles them with changes in its cash and cash equivalents such as marketable securities, it helps to assess the time at which the funds are required for farming and other allied enterprises, sources from which this can be raised, the purpose for which the loan is required, the time and quantum of repayment, etc. Cash Flow Statement, presents the movement in cash and bank balances over a period. The movement

in cash flows is classified into the following segments: operating activities: represents the cash flow from primary activities of a business.

Investing Activities: represents cash flow from the purchase and sale of assets other than inventories (e.g. purchase of a factory plant)

Financing Activities: represents cash flow generated or spent on raising and repaying share capital and debt together with the payments of interest and dividends. It can be summarized as follows;

Cash flow statement is the report showing sources and uses of cash.

Cash flow statement explains the inflow and out flow of cash during the particular period.

The main objective of the cash flow statement is to show the causes of changes in cash between two balance sheet dates.

Cash flow statement indicates the factors contributing to the reduction of cash balance in spite of increase in profit and vice-versa.

In a cash flow statement only cash receipt and payments are recorded.

Cash flow statement starts with opening cash and ends with closing cash balance.

1.4.4 Break-Even Analysis

The study of cost-volume profit analysis is often referred to as 'break-even analysis' and the two terms are used interchangeably by many. This is so, because break-even analysis is the most widely known form of cost-volume-profit analysis. The term "break-even analysis" is used in two senses—narrow sense and broad sense. In its broad sense, break-even analysis refers to the study of relationship between costs, volume and" profit at different levels of sales or production. In its

narrow sense, it refers to a technique of determining that level of operations where total revenues equal total expenses, i.e., the point of no profit, no loss.

Assumptions of Break-Even Analysis:

The break-even analysis is based upon the following assumptions:

All elements of cost, i.e., production, administration and selling and distribution can be segregated into fixed and variable components. Variable cost remains constant per unit of output irrespective of the level of output and thus fluctuates directly in proportion to changes in the volume of output.

Fixed cost remains constant at all volumes of output.

(iv) Selling price per unit remains unchanged or constant at all levels of output.

(v) Volume of production is the only factor that influences cost.

(vi) There will be no change in the general price-level. (vii) There is only one product or in case of multi-products, the sales mix remains unchanged.

(viii) There is synchronization between production and sales.

Break Even Point:

The break-even point may be defined as that point of sales volume at which total revenue is equal to total cost. It is a point of no profit, no loss. A business is said to break-even when its total sales are equal to its total costs. The break-even point refers to that level of output which evenly breaks the costs and

revenues and hence the name. At this point, contribution, i.e., sales minus marginal cost, equals the fixed costs and hence this point is often called as ‘Critical Point’ or ‘Equilibrium Point’ or ‘Balancing Point’ or no profit, no loss. If production/sales is increased beyond this level, there shall be profit to the organization and if it is decrease from this level, there shall be loss to the organization.

Computation of the Break-Even Point:

The break-even point can be computed by the following methods:

Algebraic Formula Method for Computing the Break-Even Point:

The break-even point can be computed in terms of:

Units of sales volume.

Budget total or in terms of money value.

As a percentage of estimated capacity.

Break-Even Point in Units:

As the break-even point is the point of no profit no loss, it is that level of output at which the total contribution equals the total fixed costs, It can be calculated with the help of following formula:

$$\text{Break – Even Point} = \frac{\text{Fixed Cost}}{\text{Selling Price per unit– Variable Cost per unit}} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

Break-even Point in terms of budget-total or money value:

$$\text{Hence, break-even sales} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} \times \text{Sales} = \frac{\text{Fixed Cost}}{\text{Contribution}} \times \text{Sales}$$

$$\text{With the use of P/V Ratio, B.E.P.} = \frac{\text{Fixed Cost}}{\text{P/V ratio}} \left(\text{As, } \frac{\text{Contribution}}{\text{Sales}} = \text{P/V ratio} \right)$$

There are various types of financial analysis. They are briefly mentioned herein:

External analysis: The external analysis is done on the basis of published financial statements by those who do not have access to the accounting information, such as, stockholders, banks, creditors, and the general public.

Internal Analysis: This type of analysis is done by finance and accounting department. The objective of such analysis is to provide the information to the top management, while assisting in the decision making process.

Short term Analysis: It is concerned with the working capital analysis. It involves the analysis of both current assets and current liabilities, so that the cash position (liquidity) may be determined.

Horizontal Analysis: The comparative financial statements are an example of horizontal analysis, as it involves analysis of financial statements for a number of years. Horizontal analysis is also regarded as dynamic analysis.

Vertical Analysis: it is performed when financial ratios are to be calculated for one year only. It is also called as static analysis.

An assortment of techniques is employed in analyzing financial statements. They are:

Comparative Financial Statements: It is an important method of analysis which is used to make comparison between two financial statements. Being a technique of horizontal analysis and applicable to both financial statements, income statement and balance sheet, it provides meaningful information when compared to the similar data of prior periods. The comparative statement of income statements enables to review the operational performance and to draw conclusions, whereas the balance sheets, presenting a change in the financial position during the period, show the effects of operations on the assets and liabilities. Thus, the absolute change from one period to another may be determined.

Statement of Changes in Working Capital: The objective of this analysis is to extract the information relating to working capital. The amount of net working capital is determined by deducting the total of current liabilities from the total of current assets. The statement of changes in working capital provides the information in relation to working capital between two financial periods.

Common Size Statements: The figures of financial statements are converted to percentages. It is performed by taking the total balance sheet as 100. The balance sheet items are expressed as the ratio of each asset to total assets and the ratio of each liability to total liabilities. Thus, it shows the relation of each component to the whole - Hence, the name common size.

Trend Analysis: It is an important tool of horizontal analysis. Under this analysis, ratios of different items of the financial statements for various periods are calculated and the comparison is made accordingly. The analysis over the prior year's indicates the trend or direction. Trend analysis is a useful tool to

know whether the financial health of a business entity is improving in the course of time or it is deteriorating.

Ratio Analysis: The most popular way to analyze the financial statements is computing ratios. It is an important and widely used tool of analysis of financial statements. While developing a meaningful relationship between the individual items or group of items of balance sheets and income statements, it highlights the key performance indicators, such as, *liquidity, solvency and profitability* of a business entity. The tool of ratio analysis performs in a way that it makes the process of comprehension of financial statements simpler, at the same time, it reveals a lot about the changes in the financial condition of a business entity.

It must be noted that Financial analysis is a continuous process being applicable to every business to evaluate its past performance and current financial position. It is useful in various situations to provide managers the information that is needed for critical decisions. The process of financial analysis provides the information about the ability of a business entity to earn income while sustaining both short term and long term growth.

2.0 Capital Budgeting Techniques

One of the most important aspects of managing a farm business, besides leading it towards the vision of its owners, is the management of capital. The use of capital budgeting techniques is hence an integral tool in capital management. Capital budgeting can be defined as the “total process of generating, evaluating, selecting and follow- ing up on capital expenditures”.

Capital budgeting refers to the process we use to make decisions concerning investments in the long-term assets of the firm. The general idea is that the capital, or long-term funds, raised by the firms are used to invest in assets that will enable

the firm to generate revenues several years into the future. Often the funds raised to invest in such assets are not unrestricted, or infinitely available; thus the firm must budget how these funds are invested. Capital budgeting analyzes each project by considering all of the cash flows in the life of the investment, from the initial expenditures through the termination of the project. In this fashion, it is analogous to life-cycle budgeting and costing.

Capital Budgeting is the process of determining which real investment projects should be accepted and given an allocation of funds from the firm. To evaluate capital budgeting processes, their consistency with the goal of shareholder wealth maximization is of utmost importance.

Hence, capital budgeting techniques would be the set of tools with which financial managers use to establish criteria for investing capital into available opportunities. A mistake in its capital budgeting process thus would cause a detrimental effect to the financial position of the firm business in the future.

2.1.1 Methods Of Capital Budgeting Of Evaluation

By matching the available resources and projects it can be invested. The funds available are always living funds. There are many considerations taken for investment decision process such as environment and economic conditions.

The methods of evaluations are classified as follows:

(A) Traditional methods (or Non-discount methods)

- (i) Pay-back Period Methods
- (ii) Post Pay-back Methods
- (iii) Accounts Rate of Return

(B) Modern methods (or Discount methods)

- (i) Net Present Value Method
- (ii) Internal Rate of Return Method

(iii) Profitability Index Method

2.1.2 Need and Importance of Capital Budgeting

1. Huge investments: Capital budgeting requires huge investments of funds, but the available funds are limited, therefore the firm before investing projects, plan are control its capital expenditure.

2. Long-term: Capital expenditure is long-term in nature or permanent in nature. Therefore financial risks involved in the investment decision are more. If higher risks are involved, it needs careful planning of capital budgeting.

3. Irreversible: The capital investment decisions are irreversible, are not changed back. Once the decision is taken for purchasing a permanent asset, it is very difficult to dispose off those assets without involving huge losses.

4. Long-term effect: Capital budgeting not only reduces the cost but also increases the revenue in long-term and will bring significant changes in the profit of the company by avoiding over or more investment or under investment. Over investments leads to be unable to utilize assets or over utilization of fixed assets. Therefore before making the investment, it is required carefully planning and analysis of the project thoroughly.

2.1.3 The Internal Rate of Return Method

This is the discount rate or the cost of capital that will equate the sum of present values of a project to zero. It is the rate of discount in which discounted cash inflows and outflows of a project are balanced. In other words, internal rate of returns is the maximum rate of interest a firm can afford to pay if a project is financed with borrowed funds and the project cash inflows are to be used to liquidate the loan. It is equally the minimum rate of interest a lender is willing to accept for releasing fund to the borrower. Conventionally, if the internal rate of

returns exceeds the prevailing rate (i.e. external rate of return or cost of capital), the project is considered viable.

The internal rate of return r of a cash flow sequence is defined as the discount rate at which the net present value of that sequence is zero and is therefore given by

$$\left[\sum \frac{cf}{(1+r)^n} \right] - I = 0$$

Where:

Cf = Cash inflows

n = Duration of the project

r = Rate of discount or cost of capital

I = Initial Investment or Cash Outflows.

The internal rate of return indicates the *effective interest rate* of return on invested capital and therefore the average rate of return on average capital employed.

If a cash flow sequence comprises a payment followed by a receipt at the following point in time, the internal rate of return denotes the degree of profitability.

In the case of a monotonically decreasing net present value function, the internal rate of return exceeds the discount rate as long as the net present value is positive.

Hence, an investment is economically viable if its internal rate of return is greater than the discount rate. In the case of mutually exclusive investment projects, the project with the highest internal rate of return is not necessarily the most profitable.

A ranking of investment projects by internal rate of return can therefore conflict with a ranking in accordance with the net present value method and suggest a scale of preferences which may not actually be valid.

If $IRR \geq$ opportunity cost of capital (or hurdle rate), then accept the project; otherwise reject it.

2.1.4 The Payback Period Method

The CIMA (1991) defines payback as the time required for the cash inflows from a capital investment project to equal the cash out flow. When deciding between two or more projects, the usual decision is to accept the one with the shortest payback. Payback is commonly used as a first screening method. That is, when a capital investment project is being considered, the first question to ask is, “How long will it take to pay back its cost? The firm may have a target payback period, and so it would reject a capital project unless its payback period is less than a certain number of years, perhaps five years, depending on the company policy. The specific approach to be adopted in the process of identifying the actual payback period will depend on the nature of the cashflow; i.e., whether the cashflow is constant or unequal throughout the duration of the project. Where the cashflow is even, the formula approach for payback period is appropriate, and it is defined as;

$$\text{Pay-back period} = \frac{\text{Cash Outflow}}{\text{Average Annual Earnings}}$$

But where the cash flow is unequal over the duration of the project, the cumulative approach is appropriate. Belkaoui (1980) identified the following as the merits and demerits of the pay-back period method. The merits include; it is simple to calculate and understand; it represents a quick screening device for an investor facing liquidity problem; by relying on the actual cashflows; payback period represents an objective measure of evaluating projects; it may be used as a safeguard against risk; it can be used to identify the project breakeven period or the margin of safety. He equally outlined the following demerits; it ignores the time

value of money; it ignores cash flows immediately after the payback period; it ignores the wealth maximization objective of the firm; it ignores the impact of risk on project evaluation; the choice of cut-off payback period is arbitrary; it may lead to excessive investment in short-term projects.

Adeniji (2004) asserted that in spite of the theoretical limitations of the payback period method, it is the one that is most widely used in practice. He offered the following reasons for its usage: it is easily understood by all levels of management; it provides an insight on how quickly the initial can be recouped; most managers see risk as time-related i.e. the longer the period, the greater the chance of failure; where a firm faces liquidity constraints and requires a fast repayment of investments, the pay-back period is more useful; it is appropriate in situations where

The pay-back calculation (pay-off calculation, capital recovery calculation) determines the time-span required for the recovery of a project's acquisition cost from its sales revenue (net receipts). The acquisition cost recovery period is called the pay-back period:

An investment is profitable if its pay-back period T does not exceed a predetermined maximum payback period T_{max} .

- A project is more profitable than an alternative if the pay-back period of the former is less than that of the latter, i.e. the former recovers its acquisition cost sooner. The pay-back period measures the profitability of an investment project solely by considering the time-span during which invested capital is recovered. The project's subsequent performance is ignored and, according to the pay-back criterion, long-term projects generally appear to be less profitable than those of a short-term character

Problems with Payback

1. Neglects the time value of money (no discounting)
2. Neglects all flows beyond the payback period (implicit "infinite" discounting)

Therefore, misses future negative or positive flows.

2.1.5 The Net Present Value Method

The net present value (NPV) method calculates the expected financial gain or loss from a project by discounting all expected future cash inflows and outflows back to the present point in time using the RRR. Only projects with a positive NPV are acceptable because the return from these projects exceeds the cost of capital (the return available by investing the capital elsewhere). Managers prefer projects with higher NPVs to projects with lower NPVs, if all other things are equal.

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

Where:

Cf = Cash inflows

n = Duration of the project

r = Rate of discount or cost of capital

I = Initial Investment or Cash Outflows.

If $NPV \geq 0$, then accept the project; otherwise reject the project.

The following are the advantages and disadvantages of the net present value method. The advantages are: it is consistent with the theory of wealth maximization; it considers the time value of money; it makes use of all the project

cash flows throughout the duration of the projects life; it is a clear cut method of either accepting or rejecting the project.

The disadvantages are: the method ignores the impact of risk on project evaluation; divisional manager may not be comfortable by relying on the method for performance evaluation, because it is not a rate of return method; it may mislead the investor or firm because it does not represent the actual returns associated with the project; it over-relies on the accurate estimation of the market determined cost of capital.

3.0 Investment under Uncertainty

The most important decisions for a firm's management are its investment decisions. While it is surely possible to get the firm into "trouble" through poor financing decisions or improper management of working capital, the value of the firm is principally determined by the prospects for its investments. Investments by the firm take two forms:

- (i) internally-generated projects which, if undertaken, create new assets; and
- (ii) (ii) the acquisition of external already existing assets from other firms by either direct purchase of the assets or the acquisition of the whole firm by merger, consolidation, or takeover.

Managing the investment and operational risk of capital projects is crucial to the economic viability of many industries. Given the deregulation of many sectors of the economy, including infrastructure, and the recent volatility in financial markets, decision rules for managing capital projects should consider discretion over timing and uncertainty in underlying variables. Indeed, accounting for these features often yields significantly different expected project values and optimal investment and operational policies than those from the traditional net present

value (NPV) approach, which has been a mainstay for industry and policymakers alike.

Further complicating the use of the expected NPV approach is that capital projects are more complex than simple now-or-never investments since they entail embedded options to make additional decisions at arbitrary points in time in response to the values of realized state variables. Such managerial discretion implies the right, but not the obligation, to undertake decisions in the future; thus, capital projects may be considered as packages of compound financial options.

According to Masa *et al* (2007), investment decisions relate to the corporate decision to invest its resources in the most efficient manner in business activity with the hope that the activity will, in turn, generate a stream of future returns over time. It asks the question; into what uses do we put the available funds of the business such that we become better in the future? It is the responsibility of the financial experts in collaboration with the accountants to analyse and decide on the type of asset to commit a firm's funds in anticipation of future returns.

Reference

- Adeniji, A. A. (2004). An Insight into management accounting. Lagos: Value Analysis Consult Publishers
- CIMA (1991). *Management accounting*; Official Terminology
- David, J. H. and R.A. Goldberg(1987). Agribusiness Management (2nd Ed). New York: McGraw
- Ebong, V. O. (2007) Agribusiness Management in a Developing Economy. The Nigerian Perspective, Robertminder International Publishers. Pp 1 – 6. Hill International Edition.
- Masa, A. Imegi, J. C. & Akenbor, C.O. (2007). *Financial management for business Sector*. Port Harcourt: Ceiwil Publishers
- Subba, S. R., Raghu, R.P., Neelakanta, S.T., and Bhaani, D.I (2009) Agricultural Economics. Oxford and IBH Publishers Co. PVT. LTD. New Delhi.



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