UNIT 2

Investment Definition:

The term "investment" can be used to refer to any mechanism used for the purpose of generating future income. In the financial sense, this includes the purchase of bonds, stocks or real estate property. Additionally, the constructed building or other facility used to produce goods can be seen as an investment.

Capital Definition:

The word Capital refers to be the total investment of a company money in , tangible and intangible assets
Investment decision is the process of making investment decisions in capital expenditure.

A **capital expenditure** may be defined as an expenditure the benefits of which are expected to be received over period of time exceeding one year.

The main characteristic of a capital expenditure is that the expenditure is incurred at one point of time whereas benefits of the expenditure are realized at different points of time in future.

Capital Budgeting

The process through which different projects are evaluated is known as capital budgeting. Capital budgeting is defined "as the firm‟s formal process for the acquisition and investment of capital. It involves firm‟s decisions to invest its current funds for addition, disposition, modification and replacement of fixed assets".

DEFINITION

Capital budgeting (investment decision) as, "Capital budgeting is long term

Planning for making and financing proposed capital outlays." Charles T.Horngreen

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.

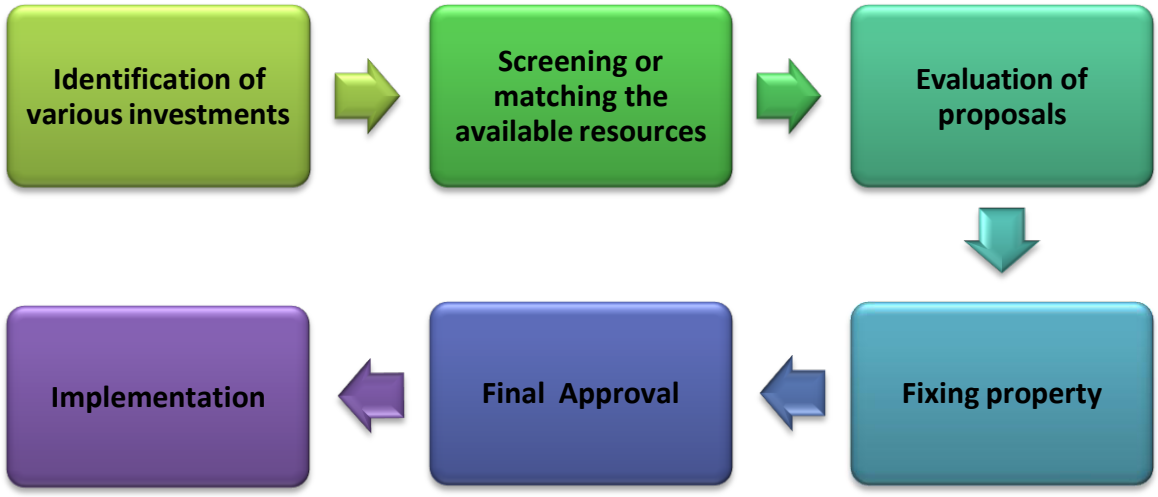
2. Long-term: Capital expenditure is long-term in nature or permanent in nature. Therefore financial risks involved in the investment decision are more. If higher risks are involved, it needs careful planning of capital budgeting.

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 of 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.

CAPITAL BUDGETING PROCESS

Capital budgeting is a complex process as it involves decisions relating to the investment of current funds for the benefit to the achieved in future and the future is always uncertain. However the following procedure may be adopted in the process of capital budgeting:



PROJECT GENERATION

1. Identification of Investment Proposals:

The proposal or the idea about potential investment opportunities may originate from the top management or may come from the rank and file worker of any department or from any officer of the organization.

2. Screening the Proposals:

The expenditure planning committee screens the various proposals received from different departments. The committee views these proposals from various angels to

ensure that these are in accordance with the corporate strategies or a selection criterion‟s of the firm and also do not lead to departmental imbalances.

PROJECT EVALUATION

3. Evaluation of Various Proposals:

The next step in the capital budgeting process is to evaluate the profitability of various proposals. There are many methods which may be used for this purpose such as payback period method, rate of return method, net present value method, internal rate of return method etc.

PROJECT SELECTION

4. Fixing Priorities:

After evaluating various proposals, the unprofitable or uneconomic proposals may be rejected straight ways. But it may not be possible for the firm to invest immediately in all the acceptable proposals due to limitation of funds. Hence, it is very essential to rank the various proposals and to establish priorities after considering urgency, risk and profitability involved therein.

5. Final Approval and Preparation of Capital Expenditure Budget:

Proposals meeting the evaluation and other criteria are finally approved to be included in the Capital expenditure budget.

PROJECT EXECUTION

6. Implementing Proposal:

Preparation of a capital expenditure budgeting and incorporation of a particular proposal in the budget does not itself authorize to go ahead with the implementation of the project. A request for authority to spend the amount should further be made to the Capital Expenditure Committee.

Further, while implementing the project, it is better to assign responsibilities for completing the project within the given time frame and cost limit so as to avoid unnecessary delays and cost over runs by applying Network techniques PERT and CPM.

7. Performance Review:

The last stage in the process of capital budgeting is the evaluation of the performance of the project. The evaluation is made through post completion audit by way of comparison of actual expenditure of the project with the budgeted one, and also by comparing the actual return from the investment with the anticipated return. The unfavorable variances, if any should be looked into and the causes of the same are identified so that corrective action may be taken in future.

DEVOLOPING CAH FLOW DATA (cash inflow and cash outflow)

The process of cash flow estimation is problematic because it is difficult to accurately forecast the costs and revenues associated with large, complex projects that are expected to affect operations for long periods of time. Forecasting project cash inflows involves numerous variables and many participants in this exercise.

Capital outlays are estimated by engineering and product development departments, revenue projections are provided by marketing group and operational cost are estimated by production people, cost accountants, purchase managers, personal executives, and tax experts and so on.

Calculation of cash inflow

Sales	xxxx
Less: Cash expenses	xxxx
PBDT	xxxx
Less: Depreciation	xxxx
PBT	xxxx
less: Tax	xxxx
PAT	xxxx
Add: Depreciation	xxxx
Cash inflow p.a	xxxx

Calculation of cash outflow

Cost of project/asset	xxxx
Transportation/installation charges	xxxx
Working capital	xxxx
Cash outflow	xxxx

PROJECT EVALUATION TECHNIQUES (OR) CAPITAL BUDGETING TECHNIQUES

There are many methods of evaluating profitability of capital investment proposals. The various commonly used methods are as follows:

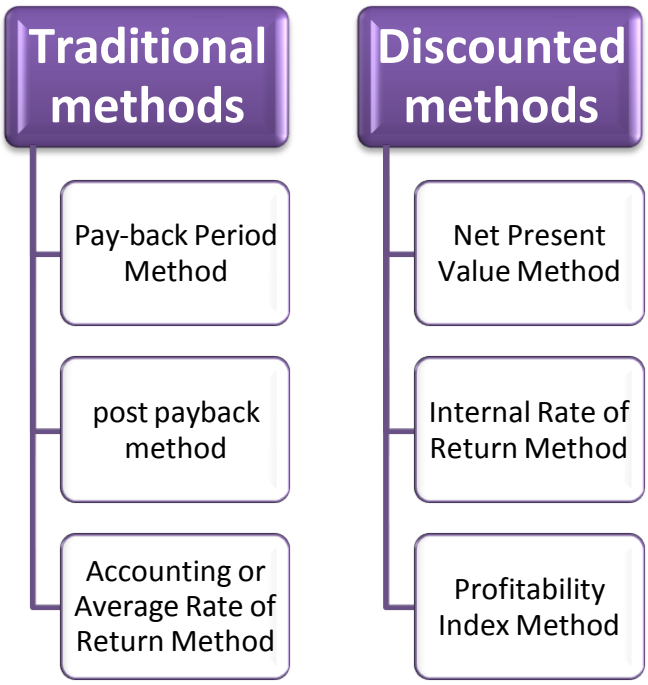
(A) Traditional methods:

(1) Pay-back Period Method or Pay out or Pay off Method.

(2) Improvement of Traditional Approach to pay back Period Method.(post payback method)
(3) Accounting or Average Rate of Return Method.

(B) Time-adjusted method or discounted methods:

(4) Net Present Value Method.
(5) Internal Rate of Return Method.
(6) Profitability Index Method.



(A) TRADITIONAL

METHODS:

1. PAY-BACK PERIOD ETHOD

The „pay back" sometimes called as pay out or pay off period method represents the period in which the total investment in permanent assets pays back itself. This method is based on the principle that every capital expenditure pays itself back within a certain period out of the additional earnings generated from the capital assets.

ACCEPT /REJECT CRITERIA

Under this method, various investments are ranked according to the length of their payback period in such a manner that the investment within a shorter payback period is preferred to the one which has longer pay back period. (It is one of the non-discounted cash flow methods of capital budgeting).

PAY BACK PERIOD = INITIAL INVESTMENT / ANNUAL CASH INFLOWS

MERITS

The following are the important merits of the pay-back method:

1. It is easy to calculate and simple to understand.
2. Pay-back method provides further improvement over the accounting rate return.
3. Pay-back method reduces the possibility of loss on account of obsolescence.

DEMERITS

1. It ignores the time value of money.
2. It ignores all cash inflows after the pay-back period.
3. It is one of the misleading evaluations of capital budgeting.

AVERAGE RATE OF RETURN:

This method takes into account the earnings expected from the investment over their whole life. It is known as accounting rate of return method for the reason that under this method, the Accounting concept of profit (net profit after tax and depreciation) is used rather than cash inflows.

ACCEPT /REJECT CRITERIA

According to this method, various projects are ranked in order of the rate of earnings or rate of return. The project with the higher rate of return is selected as compared to the one with lower rate of return. This method can also be used to make decision as to accepting or rejecting a proposal. Average rate of return means the average rate of return or profit taken for considering.

2. Average Rate of Return Method (ARR):

Under this method average profit after tax and depreciation is calculated and then it is divided by the total capital outlay or total investment in the project. The project evaluation. This method is one of the traditional methods for evaluating

The project proposals

ARR = (Total profits (after dep & taxes))/ (Net Investment in the project X No. of years of profits) x 100

OR

ARR = (Average Annual profits)/ (Net investment in the project) x 100

(b) Average Return on Average Investment Method:

This is the most appropriate method of rate of return on investment Under this method, average profit after depreciation and taxes is divided by the average amount of investment; thus:

> Average Return on Average Investment = (Average Annual Profit after depreciation and taxes)/ (Average Investment) x 100

Merits

1. It is easy to calculate and simple to understand.
2. It is based on the accounting information rather than cash inflow.
3. It is not based on the time value of money.
4. It considers the total benefits associated with the project.

Demerits

1. It ignores the time value of money.
2. It ignores the reinvestment potential of a project.
3. Different methods are used for accounting profit. So, it leads to some difficulties in the calculation of the project.

(B) TIME – ADJUSTED OR DISCOUNTED CASH FLOW METHODS: or MODERN METHOD

The traditional methods of capital budgeting i.e. pay-back method as well as accounting rate of return method, suffer from the serious limitations that give equal weight to present and future flow of incomes. These methods do not take into consideration the time value of money, the fact that a rupee earned today has more value than a rupee earned after five years.

1. NET PRESENT VALUE

Net present value method is one of the modern methods for evaluating the project proposals. In this method cash inflows are considered with the time value of the money. Net present value describes as the summation of the present value of cash inflow and present value of cash outflow. Net present value is the difference between the total present values of future cash inflows and the total present value of future cash outflows.

> **NPV = Total Present value of cash inflows – Net Investment**

If offered an investment that costs $5,000 today and promises to pay you $7,000 two years from today and if your opportunity cost for projects of similar risk is 10%, would you make this investment? You

Need to compare your $5,000 investment with the $7,000 cash flow you expect in two years. Because you feel that a discount rate of 10% reflects the degree of uncertainty associated with the $7,000 expected in two years, today it is worth:

Present value of $7000to be received in two years
$= \$ 7000/(1+0.10)^2 = \$5785.12$

By investing $5,000 today, you are getting in return a promise of a cash flow in the future that is worth $5,785.12 today. You increase your wealth by $785.12 when you make this investment.

Accept/Reject criteria

If the present value of cash inflows is more than the present value of cash outflows, it would be accepted. If not, it would be rejected.

Merits

1. It recognizes the time value of money.
2. It considers the total benefits arising out of the proposal.
3. It is the best method for the selection of mutually exclusive projects.
4. It helps to achieve the maximization of shareholders‟ wealth.

Demerits

1. It is difficult to understand and calculate.
2. It needs the discount factors for calculation of present values.
3. It is not suitable for the projects having different effective lives.

2. INTERNAL RATE OF RETURN METHOD

This method is popularly known as time adjusted rate of return method/discounted rate of return method also. The internal rate of return is defined as the interest rate that equates the present value of expected future receipts to the cost of the investment outlay. This internal rate of return is found by trial and error.

First we compute the present value of the cash-flows from an investment, using an arbitrarily elected interest rate. Then we compare the present value so obtained with the investment cost. If the present value is higher than the cost figure, we try a higher rate of interest and go through the procedure again. Conversely, if the present value is lower than the cost, lower the interest rate and repeat the process.

The interest rate that brings about this equality is defined as the internal rate of return. In other words it is a rate at which discount cash flows to zero.

This rate of return is compared to the cost of capital and the project having higher difference, if they are mutually exclusive, is adopted and other one is rejected. As the determination of internal rate of return involves a number of attempts to make the present value of earnings equal to the investment, this approach is also called the Trial and Error Method. Internal rate of return is time adjusted technique and covers the disadvantages of the Traditional techniques.

Accept/Reject criteria

If the present value of the sum total of the compounded reinvested cash flows is greater than the present value of the outflows, the proposed project is accepted. If not it would be rejected.

It is expected by the following ratio

Cash inflow / Initial Investment

Steps to be followed:

Step1. Find out factor. Factor is calculated as follows:

F = Cash outlay or Initial Investment / Cash Inflow

Step 2. Find out positive net present value

Step 3. Find out negative net present value

Step 4. Find out IRR

IRR= Base Factor + (Positive NPV/ Difference in Positive and Negative NPV) x DP

Base factor = Positive Discount Rate

DP= Difference in Percentage

Merits

1. It considers the time value of money.
2. It takes into account the total cash inflow and outflow.
3. It does not use the concept of the required rate of return.
4. It gives the approximate/nearest rate of return.

Demerits

1. It involves complicated computational method.
2. It produces multiple rates which may be confusing for taking decisions.
3. It is assume that all intermediate cash flows are reinvested at the internal rate of return.

NPV vs. IRR Methods¶

Key differences between the most popular methods, the NPV (Net Present Value)

Method and IRR (Internal Rate of Return) Method, include:

• **NPV** is calculated in terms of currency while **IRR** is expressed in terms of the percentage return a firm expects the capital project to return;

• Academic evidence suggests that the **NPV Method is preferred** over other methods since it calculates additional wealth and the IRR Method does not;

• The IRR Method cannot be used to evaluate projects where there are **changing cash flows** (e.g., an initial outflow followed by in-flows and a later out-flow, such as may be required in the case of land reclamation by a mining firm);

• However, the **IRR Method does have one significant advantage** -- managers tend to better understand the concept of returns stated in percentages and find it easy to compare to the required cost of capital; and, finally,

• While both the NPV Method and the IRR Method are both DCF models and can even reach similar conclusions about a single project, the use of the IRR Method can lead to the belief that a smaller project with a shorter life and earlier cash inflows, is preferable to a larger project that will generate more cash.

• Applying NPV using **different discount rates** will result in different recommendations. The IRR method always gives the same recommendation.

COST OF CAPITAL

The cost of capital of a firm is the minimum rate of return expected by its investors. It is the weighted average cost of various sources of finance used by a firm. The capital used by a firm may be in the form of debt, preference capital, retained earnings and equity shares. The concept of cost of capital is very important in the financial management. A decision to invest in a particular project depends upon the cost of capital of the firm or the cut off rate which is the minimum rate of return expected by the investors.

DEFINITIONS