

UNIT –II

INVESTMENT DECISIONS

1. What is Capital Budgeting? State its features.

Ans. Capital budgeting is the process of making investment decisions in capital expenditures. 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.

According to Charles T. Horngreen, “Capital budgeting is long term planning for making and financing proposed capital outlays”.

In other words, capital budgeting means planning for capital assets. It is a decision which involves the current outlay of cash resources in return for an anticipated flow of future benefits. The process of capital budgeting involves a comparison between current investment and expected future benefits for the project over a long period of time. The benefit may be increased in revenues or decreased in cost.

So, the capital budgeting process involves the calculation of anticipated benefit, taking high degree of risk and waiting for a period between initial outlays and expected future returns.

Features:

- (i) Capital budgeting decisions involve the exchange of current funds for the benefits to be achieved in future.
- (ii) The future benefits are expected to be realized over a series of years.
- (iii) The funds are invested in non-flexible and long term activities.
- (iv) They have a long term and significant effect on the profitability of the concern.
- (v) They involve generally huge funds.
- (vi) They are irreversible decisions.
- (vii) They are ‘Strategic’ investment decisions, involving large sums of money, major departure from the past practices of the firm, significant changes of the firm’s expected earnings associated with high degree of risk, as compared to ‘tactical’ investment decisions which involve a relatively small amount of funds that do not result in a major departure from the past practices of the firm.

2. State the different steps in capital Budgeting.

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

(i) Identification of Investment Proposal: The capital budgeting process begins with the 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 from workers of any department or from any officer of the organization. The departmental head analyze the various proposals in the light of the corporate strategies and submit the suitable proposals to the capital Expenditure Planning committee.

(ii) Screening the proposals: The Expenditure planning committee screens the various proposals received from different departments. The committee views these proposals from various angles to ensure that these are in accordance with the corporate strategies or selection criteria of the firm and also do not lead to departmental imbalances.

(iii) 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.

(iv) Fixing Priorities: After evaluating various proposals, the unprofitable or uneconomic proposals may be rejected straight away. 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.

(v) 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. However, proposals involving smaller investment may be decided at the lower levels for expeditious action. The capital expenditure budget lays down the amount of estimated expenditure to be incurred on fixed assets during the budget period.

(vi) 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 which may like to review the profitability of the project in the changed circumstances. 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.

(vii) 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 on the project with the budgeted one, and also by comparing the actual return from the investment with the anticipated return.

Thus, capital budgeting involves the consideration of investment proposals, estimation, of cash flow for the proposals, evaluation of the cash flow, selection of project based upon some criterion, and finally the continued re-evaluation of the project after their acceptance.

3. Discuss the different methods of evaluation of capital Budgeting.

Ans. The following are the methods of Capital Budgeting:

A. Traditional method

(i) Payback period: The payback 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. Thus, it measures the period of time for the original cost of a project to be recovered from the additional earnings of the project itself under this method, various investments are ranked according to the length of their payback period in such a manner that the investment with a shorter payback period is preferred to the one which has longer payback period.

Advantages:

- (i) The main advantage of this method is that it is simple to understand and easy to calculate.
- (ii) It saves in cost, it requires lesser time and labour as compared to other methods of capital budgeting.
- (iii) In this method, as a project with a shorter payback period is preferred to the one having a longer pay-back period, it reduces the loss through obsolescence and is more suited to the developing countries, like India, which are in process of development and have quick obsolescence.

- (iii) Due to its short term approach, this method is particularly suited to a firm which has shortage of cash or whose liquidity position is not particularly good.
- (iv) Inherently the method provides for uncertainty, dealing with risk is a “Built in” feature of this method. It focuses on recovery of investment, takes care of uncertainty and risk to a greater extent.
- (v) Profit is recognized only after the pay-back period. So, it acts as a guideline for dividend policy in case of new firms.
- (vi) The importance given to liquidity through the emphasis on early returns from projects will enable a firm to manage with lower funds.

Disadvantages:

- (i) It does not take into account the cash inflows earned after the payback period and hence the true profitability of the project cannot be correctly assessed.
- (ii) This method ignores the ‘Time value of money’ and does not consider the magnitude and timing of cash inflows. It treats all cash inflows as equal though they occur in different periods. Thus, the interest aspect and the risk aspect which make cash inflows in the distant future less desirable than the immediate cash inflows are not recognized in this method.
- (iii) It does not make use of cost of capital which is highly relevant for investment analysis in the sense it represents the cost of funds to be invested.
- (iv) It may be difficult to determine the minimum acceptable pay-back period; it is usually, a subjective decision.
- (v) It treats each asset individually in isolation with other assets which is not feasible in real practice.

(II) Rate of return method: 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 project is used rather than cash inflows. 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. The return on investment method can be used in several ways as follows:

- (i) Average Rate of Return Method.
- (ii) Return per unit of Investment Method.
- (iii) Return on Average Investment Method.
- (iv) Average return on average investment method.

Advantages:

- (i) It is very simple to understand and easy to operate.
- (ii) It uses the entire earnings of a project in calculating rate of return and not only the earnings upto pay-back period and hence gives a better way of profitability as compared to pay-back-period method.
- (iii) As this method is based upon accounting concept of profits, it can be readily calculated from the financial data.

Disadvantages:

- (i) This method also like pay-back period method ignores the time value of money as the profits earned at different points of time are given equal weight by averaging the profits. It ignores the fact that a rupee earned today is of more value than a rupee earned one year after, or so.
- (ii) It does not take into consideration the cash flows which are more important than the accounting profits.
- (iii) This method cannot be applied to a situation where investment in a project is to be made in parts.

Discounted Method:

(I) Net present value Method: The net present value method is a modern method of evaluating investment proposals. This method takes into consideration the time value of money and attempts to calculate the return on investments by introducing the factor of time element. It recognizes the fact that a rupee earned today is worth more than the same rupee earned tomorrow. The net present values of all inflows and outflows of cash occurring during the entire life of the project is determined separately for each year by discounting these flows by the firm's cost of capital or a pre-determined rate.

Advantages:

- (i) It recognizes the time value of money and is suitable to be applied in a situation with uniform cash outflows and uneven cash inflows or cash inflows at different periods of time.
- (ii) It takes into account the earnings over the entire life of the project and the true profitability of the investment proposal can be evaluated.
- (iii) It tries to maximize the profits by favouring more profitable projects.

Disadvantages:

- (i) As compared to the traditional methods, the net present value method is more difficult to understand and operate.
- (ii) It may not give good results while comparing projects with unequal lives as the project having higher net present value but realized in a longer life span may not be as desirable as a project having something lesser net present value achieved in a much shorter span of life of the asset.
- (iii) Comparison of projects with unequal life times may be misleading because the amount of NPV alone is considered in this method.
- (iv) Comparing different projects with different amounts of investments becomes difficult in this method.
- (v) It is not easy to determine an appropriate discount rate.

(II) Internal Rate of Return Method: The internal rate of return method is also a modern technique of capital budgeting that takes into account the time value of money. It is also known as 'time adjusted rate of return', 'discounted cash flow', 'yield method' and 'trial and error yield method'. Under this method the cash flows of a project are discounted at a suitable rate by hit and trial method, which equates the net present value so calculated to the amount of the investment. Under this method, since the discount rate is determined internally, the method is called as the internal rate of return method.

Advantages:

- (i) This method takes into account the time value of money and can usefully be applied in situations with even as well as uneven cash flow at different periods of time.
- (ii) It considers the profitability of the project for its entire economic life and hence enables evaluation of true profitability.
- (iii) The determination of cost of capital is not pre-requisite for the use of this method and hence it is better than net present value method where the cost of capital cannot be determined easily.
- (iv) It provides for uniform ranking of various proposals due to the percentage rate of return.
- (v) This method is also compatible with the objective of maximum profitability and is considered to be a more reliable technique of capital budgeting.

Disadvantages:

- (i) The economic life of an investment is very difficult to ascertain accurately.
- (ii) This method is based upon the assumption that the earnings are re-invested at the internal rate of

return for the remaining life of the project, which is not a justified assumption particularly when the average rate of return earned by the firm is not close to the internal rate of return.

(iii) The results of NPV method and IRR method may differ when the projects under evaluation differ in their size, life and timings of cash flows.

(III) Profitability Index Method: It is also a time adjusted method of evaluating the investment proposals, profitability index represents the relationship between present value of cash inflows and present value of cash outflows. Thus,

$$\text{Profitability Index} = \frac{\text{Present value of Cash Inflows}}{\text{Present value of Cash Outflows}}$$

The profitability index may be found for net present values of inflows

$$\text{Profitability Index (Net)} = \frac{\text{Net Present value (NPV)}}{\text{Present value of Cash Outflows}}$$

The proposal is accepted if the profitability index is more than one and is rejected in case the profitability index is less than one.

Advantages and Disadvantages of Profitability:

The method is slight modification of the NPV method. The NPV method has one major drawback that it is not easy to rank projects on the basis of this method particularly when the cost of the projects differs significantly. To evaluate such projects, the profitability index method is most suitable.

The other advantages disadvantages of this method are same as those of NPV.

(IV) Terminal Value Method: The terminal value method is an improvement over the NPV method of making investment decisions. Under this method, it is assumed that each of the future cash flows is immediately reinvested in another project at a certain (hurdle) rate of return until the termination of the project. In other words, the net cash flows and outlays are compounded forward rather than discounting them backward as followed in NPV method. In case of single project, the project is accepted if the present value of the total of the compounded reinvested cash flows is greater than the present value of cash outlays, otherwise it is rejected. In case of mutually exclusive projects, the project with higher present value of the total of the compounded cash flows is accepted.

4. Distinguish between NPV and IRR. Also point out similarities between these two.

Ans. The following are the points of distinction between NPV and IRR:

(i) In the NPV method, the present value is determined by discounting the future cash flows of a project at a pre-determined or specified rate called the cut off rate based on cost of capital . But under the IRR method, the cash flows are discounted at a suitable rate by hit and trial method which equities the present value so calculated to the amount of the investment.

(ii) Under IRR method, discount rate is not pre-determined or known as is the case in NPV method.

(iii) The NPV method recognizes the importance of market rate of interest or cost of capital. It arrives at the amount to be invested in a given project so that its anticipated earnings would recover the amount invested in the project at market rate whereas, the IRR method does not consider the market rate of interest and seeks to determine the maximum rate of interest at which funds invested in any project could be repaid with the earnings generated by the project.

(iv) The presumption of NPV method is that intermediate cash inflows are re-invested at the cut-off rate, whereas, in the case of IRR method, intermediate cash flows are presumed to be re-invested at the internal rate of return.

(v) The results shown by NPV method are similar to that of IRR method under certain situations, whereas, the two give contradictory results under some other circumstances. However, NPV method using a pre-determined cut-off rate is more reliable than the IRR method for ranking two or more capital investment proposals.

Similarities between NPV and IRR:

- (i) Both are modern techniques capital budgeting.
- (ii) Both are considering the time value of money.
- (iii) Independent investment proposals which do not compete with one another and which may be either accepted or rejected on the basis of a minimum required rate of return. Under these circumstances, both methods gave same results.
- (iv) Conventional investment proposals which involve cash outlays or outlays in the initial period followed by a series of cash inflows. Both methods gave same results under these circumstances.

5. Discuss the need (objectives) and importance of capital Budgeting.

Ans.: The following are the objectives of capital budgeting:

- (i) To find out the profitable capital expenditure.
- (ii) To know whether the replacement of any existing fixed assets gives more return than earlier.
- (iii) To decide whether a specified project is to be selected or not.
- (iv) To find out the quantum of finance required for the capital expenditure.
- (v) To assess the various sources of finance for capital expenditure.
- (vi) To evaluate the merits of each proposal to decide which project is best.

Importance: Capital budgeting is the most vital activity which can 'make or mar' a firm's future financial health. The need, significance or importance of capital budgeting arises mainly due to the following:

(i) Large Investments: Capital budgeting decisions, generally involve large investment of funds. But the funds available with the firm are always limited and the demand for funds for exceeds the resources. Hence, it is very important for a firm to plan and control its capital expenditure.

(ii) Long term commitment of funds: Capital expenditure involved not only large amount of funds but also funds for long-term or more or less on permanent basis. The long term commitment of funds increases the financial risk involved in the investment decision. Greater the risk involved, greater is the need for careful planning of capital expenditure i.e. capital budgeting.

(iii) Irreversible Nature: The capital expenditure decisions are of irreversible nature. Once the decision for acquiring a permanent asset is taken; it becomes very difficult to dispose of these assets without incurring heavy losses.

(iv) Long term Effect on Profitability: Capital budgeting decisions have a long term and significant effect on the profitability of a concern. Not only the present earnings of the firm are affected by the investments in capital assets but also the future growth and profitability of the firm depends upon the investment decision taken today.

(v) Difficulties on Investment Decisions: The long term investment decisions are difficult to be taken because amounting extends to a series of years beyond the current accounting period, uncertainties of future and high degree of risk.

(vi) Growth and Expansion: Business firms grow, expand, diversify and acquire stature in the industry through capital budgeting activities. The success of mobilization and deployment of funds determines the future of a firm.

Thus, we may say that without using capital budgeting techniques a firm may involve itself in a losing project. Proper timing of purchase, replacement expansion and alteration of assets is essential.

6. Explain the factors influencing capital budgeting expenditure decisions.

Ans.: There are many factors, financial as well as non-financial, which influence the capital expenditure decisions. The crucial factor that influences the capital expenditure decisions is the profitability of the proposal. Yes, there are many other factors which have to be taken into consideration while taking a capital expenditure decision.

These are:

(i) Urgency: Sometimes investment is to be made due to on urgency for the survival of the firm or to avoid heavy losses. In such circumstances, the proper evaluation of the proposal cannot be made through profitability tests. The examples of such urgency are breakdown of some plant and machinery, fire, accident etc.

(ii) Degree of certainty: profitability is directly related to risk, higher the profits, greater is the risk or uncertainty. Sometimes, a project with some lower profitability may be selected due to constant flow of income as compared to another project with an irregular and uncertain flow of income.

(iii) Intangible factors: Sometimes a capital expenditure has to be made due to certain emotional and intangible factors such as safety and welfare of workers, prestigious project, social welfare, goodwill of the firm, etc.

(iv) Legal factors: An investment which is required by the provisions of law is solely influenced by this factor and although the project may not be profitable yet the investment has to be made.

(v) Availability of funds: As the capital expenditure, generally requires large funds, the availability of funds is an important factor that influences the capital budgeting decisions. A project, however profitable, may not be taken for want of funds and a project with a lesser profitability may be sometimes preferred due to lesser pay-back period for want of liquidity.

(vi) Future Earnings: A project may not be profitable as compared to another today, but it may promise better future earnings. In such case, it may be preferred to increase earnings.

(vii) Obsolescence: There are certain projects which have greater risk of obsolescence than others. In case of projects with high rate of obsolescence, the project with a lesser pay-back period may be preferred than one which may have higher profitability but still longer pay-back period?

7. Write a short note on Risk Adjusted Discount Rate as method of capital budgeting under risk.

Ans. The Risk Adjusted Discount Rate is one of the simplest and the most widely used methods for incorporating risk into the capital budgeting decision. Under this method, the amount of risk inherent in a project is incorporated in the discount rate employed in the present value calculations.

Relatively risky projects would have relatively high discount rates and relatively safer projects would have relatively lower discount rates.

The Risk Adjusted Discount Rate method can be used with both the NPV and the IRR. If the NPV method is used to evaluate capital expenditure decision, NPV would be calculated using the risk adjusted rate. If the NPV is positive, the proposal would be qualify for acceptance. In case of the IRR as a decision criterion, the IRR would be compared with the risk adjusted required rate of return. If the IRR exceeds the risk adjusted rate, the proposal would be accepted, otherwise not.

Advantages:

- (i) It is simple to calculate and easy to understand.
- (ii) In actual practice, companies apply different standards of cost of capital for different projects. It has therefore, the merit of operational feasibility.
- (iii) It shows the risk associated with the project.

Disadvantages:

- (i) The greatest drawback of this method is that it is not possible to determine the risk premium rate appropriately.
- (ii) It is the future cash flow which is uncertain and requires adjustment and not the discount rate.
- (iii) The process of adding the risk premium to the discount rate leads to a compounding of risk overtime. This is not a theoretical desirable practice. It is because the discounting process should only take into account time value considerations and not risk considerations.

7. Write a short note on Certainty Equivalent as method of capital budgeting under risk.

Ans. Under this method, the estimated cash flows are reduced to a conservative level with the help of a correction factor known as certainty equivalent coefficient. It can be employed by multiplying the expected cash flows by certainty equivalent co-efficient as to convert the uncertain cash flows to certain cash flows. This is the correction factor in the ratio of riskless/certain cash flow to risky cash flow. It is the relationship between certain (riskless) cash flow and risk (uncertain) cash flows.

It may be presented in the following form:

$$\frac{\text{Riskless cash flow}}{\text{Risky cash flow}}$$

It should be noted that riskless cash flow means the cash flow which is certain, i.e. the management agrees to accept the cases where no risk is involved.

Advantages: The certainty-equivalent approach has the following merits:

- (i) It is simple to calculate.
- (ii) It recognises risk by modifying the cash flows which are subject to risk, i.e. conceptually it is superior to the earlier method, viz., time-adjusted discount rate method.
- (iii) It is useful when comparing a number of project appraisals in decision-making as it is based on the probability of the combined NPVs occurring.

Disadvantages: This approach suffers from the following limitations:

- (i) In actual practice, it is very difficult to implement.
- (ii) This approach depends on the utility preference to the management and intuitive recognition of the investors since it is a subjective estimate, i.e., it can neither be objective nor be precise and consistent.
- (iii) It does not recognise the probability distribution of possible cash flows.
- (v) Sometimes the forecasts are to pass through several levels of management; in that case, the effect may be to exaggerate the original forecast.

Even though this method is not free from snags, it is theoretically superior to the risk-adjusted discount rate method.