**Course – Financial Management**

**Chapter- Capital Budgeting**

**Sheet 02**

1. **Definition of Capital Budgeting**

**Capital budgeting is the process that a business uses to determine which proposed** [**fixed asset**](https://www.accountingtools.com/articles/2017/5/10/fixed-asset) **purchases it should accept, and which should be declined. This process is used to create a** [**quantitative**](https://www.accountingtools.com/articles/2017/5/8/quantification) **view of each proposed fixed asset investment, thereby giving a rational basis for making a judgment.**

1. **Importance of Capital Budgeting Decisions**

**Capital investment, representing the growing edge of a business, are deemed to be very important for three inter-related reasons.**

**(a) They have long-term consequences capital investment decisions have considerable impact on what the firm can do in future.**

**(b) It is difficult to reverse capital investment decisions, because the market for used capital investment is ill organized and/or most of the capital equipment bought by a firm are tailored to meet its specific requirements.**

**(c) Capital investment decisions involve substantial outlays.**

1. **Objectives of Capital Budgeting**

**The following are the objectives of capital budgeting.**

**1. To find out the profitable capital expenditure.**

**2. To know whether the replacement of any existing fixed assets gives more return than earlier.**

**3. To decide whether a specified project is to be selected or not.**

**4. To find out the quantum of finance required for the capital expenditure.**

**5. To assess the various sources of finance for capital expenditure.**

**6. To evaluate the merits of each proposal to decide which project is best.**

1. **Features of Capital Budgeting**

**The features of capital budgeting are briefly explained below:**

**1. Capital budgeting involves the investment of funds currently for getting benefits in the future.**

**2. Generally, the future benefits are spread over several years.**

**3. The long term investment is fixed.**

**4. The investments made in the project is determining the** [**financial condition of business organization**](https://accountlearning.com/identifying-your-capital-position-in-financial-situation/) **in future.**

**5. Each project involves huge amount of funds.**

**6. Capital expenditure decisions are irreversible.**

**7. The profitability of the business concern is based on the quantum of investments made in the project.**

1. **Limitations of Capital Budgeting**

**The following are the limitations of capital budgeting.**

**1. The economic life of the project and annual cash inflows are only an estimation. The actual economic life of the project is either increased or decreased. Likewise, the actual annual cash inflows may be either more or less than the estimation. Hence,** [**control over capital expenditure**](https://accountlearning.com/5-techniques-control-capital-expenditure/) **can not be exercised.**

**2. The application of capital budgeting technique is based on the presumed cash inflows and cash outflows. Since the future is uncertain, the presumed cash inflows and cash outflows may not be true. Therefore, the selection of profitable project may be wrong.**

**3. Capital budgeting process does not take into consideration of various non-financial aspects of the projects while they play an important role in successful and profitable implementation of them. Hence, true profitability of the project cannot be highlighted.**

**4. It is also not correct to assume that mathematically exact techniques always produce highly accurate results.**

**5. All the techniques of capital budgeting presume that various investment proposals under consideration are mutually exclusive which may not be practically true in some particular circumstances.**

**6. The** [**morale of the employee**](https://accountlearning.com/methods-of-increasing-morale-of-employees/)**, goodwill of the company etc. cannot be quantified accurately. Hence, these can substantially influence capital budgeting decision.**

**7. Risk of any project cannot be presumed accurately. The project risk is varying according to the changes made in the business world.**

**8. In case of urgency, the capital budgeting technique cannot be applied.**

**9. Only known factors are considered while applying capital budgeting decisions. There are so many unknown factors which are also affecting capital budgeting decisions. The unknown factors cannot be avoided or controlled.**

**6. Following are the steps in Capital Budgeting:**

1. **Generating Proposals**
2. **Project Cash-flow: a. Outflow (investment), b. Inflow (revenue)**
3. **Estimate Capacity Utilization (upto economic life of asset)**
4. **Evaluating Cash flow**
5. **Selection from mutually exclusive projects**
6. **Re-evaluation**
7. **Steps of Capital Budgeting**

**The following points highlight the seven procedures for capital budgeting.**

**Capital Budgeting Procedure # 1. Identification of Investment Proposals:**

**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 file worker of any department or from any officer of the organisation. The departmental head analyses the various proposals in the light of the corporate strategies and submits the suitable proposals to the Capital Expenditure Planning Committee in case of large organisations or to the officers concerned with the process of long-term investment decisions.**

**Capital Budgeting Procedure # 2. 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 criterion of the firm and also do not lead to departmental imbalances.**

**Capital Budgeting Procedure # 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. All these methods of evaluating profitability of capital investment proposals have been discussed in detail separately in the following pages of this chapter.**

**It should, however, be noted that the various proposals to the evaluated may be classified**

**(i) Independent proposals**

**(ii) Contingent or dependent proposals and**

**(iii) Mutually exclusive proposals.**

**Independent proposals are those which do not compete with one another and the same may be either accepted or rejected on the basis of a minimum return on investment required.**

**The contingent proposals are those whose acceptance depends upon the acceptance of one or more other proposals, e.g., further investment in building or machineries may have to be undertaken as a result of expansion programme. Mutually exclusive proposals are those which compete with each other and one of those may have to be selected at the cost of the other.**

**Capital Budgeting Procedure # 4. 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.**

**Capital Budgeting Procedure # 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. 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.**

**Capital Budgeting Procedure # 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 which may like to review the profitability of the project in the changed circumstances.**

**Capital Budgeting Procedure # 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 on the project with the budgeted one, and also by comparing the actual return from the investment with the anticipated return.**

**The unfavourable variances, if any should be looked into and the causes of the same be identified so that corrective action may be taken in future.**

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1. **TECHNIQUES OF EVALUATING CBD & SINGLE OBJECTIVE**

**This section has described some of the traditional and modem techniques for the evaluation of capital investment proposals both under certainty and condition of risk and uncertainty.**

**Let us discuss the traditional CBD techniques:**

**Pay Back Approach**

**The pay back period is the length of time required to recover the initial cash outlay on the project i.e. the time required for the project to pay for itself.**

**Original investment**

**Pay back period = ---------------------------------**

**Annual cash flow**

**Under this approach, projects may be accepted or rejected based on the numbers 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.**

**Merit**

**(i) It is simple to understand and easy to calculate.**

**(ii) It is a rough and ready method for dealing with risk.**

**(iii) Since it emphases earlier cash inflows, it may be a sensible criteria when the firm is pressed with problem of liquidity.**

**(iv) It costs less than the most modernised techniques which require a lot of analysts time and use of computer.**

**Demerits**

**(i) It ignores cash flows beyond the payback period.**

**(ii) It is not an appropriate method of measuring the profitability of an investment project, as it does not consider the entire cash inflow yielded by the project**

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

**(iv) Though it measures a project liquidity, it does not indicate the liquidity position of the firm as a whole, which is more important.**

**According to Weingartner [119] “the usually designated speculative and/or precautionary motive of firm to hold liquid or near liquid funds in order to seize upon unexpected opportunities in a different motive from that which requires each new investment separately to recover its original cost within a short period”.**

**AVERAGE RATE OF RETURN**

**The average rate of return, also called the accounting rate of return. It is defined as**

**Average income**

**Average investment**

**Obviously, the higher the average rate of return, the better the project. In general, projects which have an average rate of return equal to or greater than a pre specified cut-off rate of retum-which is usually between 20 percent and 30 percent are accepted otherwise are rejected. Projects are ranked in a descending order ascending to the highest ARR.**

**Merits.**

**(i) It is simple to calculate.**

**(ii) It is based upon accounting information which readily available and**

**familiar to businessman.**

**(iii) It considers benefits over the entire life of the project.**

**Demerits**

**(i) It is based upon accounting profit not cash flow.**

**(ii) It does not take into account the time value of many. Profits occurring in different periods are valued equally.**

**(iii) It is incompatible with the firm’s objective of maximising the market value of shares. Shares values do not depend upon average rate of return.**

**3.5.3 Net Present Value Method**

**The net present value method is one of the discounted cash flow method used in the appraisal of capital investment proposal. It is “the present value of the projects” net cash flows discounted at the company’s cost of capital to the time of the initial capital outlay, minus that initial capital outlay, and is represented by the formula**

**n At**

**NPV = ￡**

**t=0' (l+k)‘**

**where,**

**k assumed cost of capital or discount rate**

**A, = Cash flow for the period t, whether it be a net cash**

**outflow or inflow**

**n =■ life of the project on the last period in which a cash**

**flow is expected.**

**The acceptance rule under this approach is to accept investment project if its NPV is positive, equal to zero, and to reject investment project with negative NPV. Projects are ranked according to their NPV and those with the highest NPV are given the highest rank.**

**Relationship Between NPV and K**

**It is evident that the NPV of a conventional project decreases if the discount rate increases. This is because when the discount rate increases, the discounting factor becoming smaller, making the present value of cash flows smaller. The relationship between the NPV and the discounted rate may be represented graphically as the net present value profile. Figure -3.2 shows the net present value profile for an illustrative project.**

**NPV**

**Year Cash flow**

**0 Rs. (10,00,000)**

**1 2,00,000**

**2 2,00,000**

**3 3,00,000**

**4 3,00,000**

**5 3,50,000**

**The cost of capital k for the firm is 10 percent**

**The NPV of the proposal is**

**NPV**

**10,000 2,00,000 2,00,000**

**(1.10)2 (1.10)2 (1.10)2**

**3,00,000 3,00,000 3,50,000**

**. +---------- +-----------**

**(1.10)3 (1.10)4 (I.10)5**

**= 5273**

**Merits**

**The net present value criterion has considerable merits.**

**(i) It takes into account the time value of money.**

**(ii) It considers the cash flow stream in its entirety.**

**(iii) It squares neatly with the financial objective of maximisation of the wealtfe of owners.**

**Demerits**

**(i) The calculation of the present value presuppose/that the discount rate which is usually the firm’s cost of capital is known. But\he cost of capital is quite a difficult concept to understand and measure in practice.**

**(ii) As it is expressed as an absolute number it is not readily intelligible to decision makers who are wanted to think in relative terms (like rate of return an profitability index)**

**(iii) It is difficult to use.**

**Internal Rate of Return- IRR**

**It refers to the rate of return which is internal to a given project for discounting various cash inflows accruing 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. This is represented by the formula.**

**n A,**

**I ------ -- -T0 = 0**

**t=G (1+k)1**

**where.**

**r = internal rate of return**

**A, = cash inflows accruing in project**

**I0 = initial capital outlay**

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

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

**Merits**

**(i) It takes into account the time value of money.**

**(ii) It considers the cash flow stream in its entirety.**

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

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

**(v) it is very easy to understand, use and is directly consistent with firm’s owner’s welfare maximisation objectives.**

**Demerits**

**(i) The internal rate of return may not be uniquely defined. If the cash flow stream of a project has more than one change in sign, there is a possibility that there are multiple rates of return.**

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

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

**3.5.5 Profitability Index Method**

**The profitability index (PI) or benefit cost (BIC) ratio is also are of the time adjusted techniques of evaluating capital investment proposals,. It is the**

**4\*1 ratio of the present value of cash inflows and outflows and is represented by the formula :**

**PV of cash inflows**

**PI = ------- ------------------**

**Initial cash outflows**

**The acceptance rule 1 is to accept the projects with PI greater then one and reject those with PI less than 1. Project can be ranked in accordance with this PI.**

**Merit**

**The proponents of benefit cost ratio argue that since this criterion measures net present value per rupee of outlay, it can discriminate better between larger and smaller investments and hence is preferable to the net present value criterion.**

**Weingartner [119] who examined their criterion theoretically, finds that**

**• Under unconstrained conditions, the benefit cost ratio criterion will accept and reject the same projects as the net present value criterion.**

**• When the capital budget is limited in the current period,, the benefit cost ratio criterion may rank projects correctly in the order of deereasingly efficient use of capital. However, its use is not**

**recommended because it provides no means for aggregating several**

**smaller projects into a package that can be compared with a large project. When cash outflows occur beyond the current period, the benefit cost ratio criterion is unsuitable as a selection criterion**

**n A,**

**£ --7 t=0 (l+k)1**

**Io**

**Capital Rationing**

**Some profitable projects whose, net present value, 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.**

**Under rationing of capital, the selection process involves ranking of project according to some measure of profitability until the funds are exhausted.**