CHAPTER 7

Capital Budgeting

A Introduction

Every firm has to invest in two types of assets in order to undertake a proposed project, such as — *Fixed Assets and Current Assets*. So, before accepting a proposed project, the financial managers have to make forecasting of investment in these two types of assets. The forecasting relating to investment in current assets is called **Working Capital Forecasting**. On the other hand, the forecasting relating to investment in fixed assets is called **Capital Budgeting**. The term 'Capital Budgeting' is formed by a combination of two words—one is '*Capital*' and the other is 'Budgeting'. In common parlance, capital refers to the Capital employed in a business. But in capital Budgeting, Capital refers to the required capital expenditure for undertaking a proposed project. Again, budgeting refers to the process of preparation of budget. So, *Capital Budgeting means—the process of preparation of budget for the required capital expenditure in order to undertake a proposed project*. We will discuss about different methods of capital budgeting in this chapter.

B Definition of Capital Budgeting

Capital budgeting refers to the work of preparation of required capital expenditure budget for undertaking a proposed project. Different experts have defined capital budgeting in different ways. A few of such definitions are given below :

According to **Charles T. Horngreen** — *Capital Budgeting is long-term planning for making and financing proposed capital outlay.*

According to **R. M. Lynch** — *Capital Budgeting consists in planning for development of available capital for the purpose of maximising the long-term profitability (Return on Investment) of the firm.*

According to **Lawrence D. Schall** and **Charles W. Haley** — *The process of determining both how much to spend on capital assets and which assets to acquire is called Capital Budgeting.*

In order to give clear concept regarding capital budget and capital budgeting, **Eugene F. Brigham** and **Louis C. Gapenski** said that,— *the capital budget is an outline of planned expenditures on fixed assets, and capital budgeting is the whole process of analyzing projects and deciding whether they should be included in the capital budget.*

On the basis of above discussion, it can be said that ***the process of preparing the long-term planning for the purpose of financing funds for required capital expenditure for a proposed project in order to get returns from the project over a long period in future, is called Capital Budgeting.***

C Classification of Capital Budgeting

There are two types of capital budgeting; such as—

1. **Capital Budgeting under certain condition :** When in a capital budgeting decision, it is assumed that there is no uncertainty *i.e.*, when it is assumed that all the assumptions

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on the basis of which a capital budgeting decision is taken will be true in future, the capital budgeting process is called **Capital Budgeting under certain condition.**

2. **Capital Budgeting under uncertain condition :** When the estate of uncertainty of the future is considered in a capital budgeting decision, the capital budgeting process is called **Capital Budgeting under uncertain condition.**

   It can be mentioned in this regard that in the present chapter, we will discuss about capital budgeting under certain condition.

D Features of Capital Budgeting

The features which are found in capital budgeting are—

(i) Capital budgeting is a decision of making investment in fixed assets for undertaking a proposed project.

(ii) As benefits are obtained from fixed assets for a long-term in future, capital budgeting is a long-term decision-making process.

(iii) As the effect of capital budgeting remains in force over a long period, it is a very risky decision-making process.

(iv) Capital budgeting decision is taken with a hope of getting benefits in future.

(v) The investment decisions which are taken in capital budgeting are irreversible.

(vi) In capital budgeting, decisions are taken for incurring capital expenditure in order to get returns over a long period. But such returns can not be obtained immediately with the incurring of the expenditure. In most of the cases, there is a long time lag between the initial outlay and the anticipated returns.

(vii) A large amount of fund is concerned with the capital budgeting decision.

E Areas of Capital Budgeting

The areas for which capital budgeting decisions are taken are—

(i) *Acceptance of a new project;*

(ii) *Acceptance of a new project instead of an old project;*

(iii) *Replacement of a mannual machine with an automatic machine;*

(iv) *Replacement of an old machine with a new improved machine;*

(v) *Selection of the best project out of more than one alternative projects;*

(vi) *Expansion and modernisation of the firm;*

(vii) *Setting a new line of business by making investment in new plant and machinery; and*

(viii) *Improvement of the quality of the product to increase sales in future.*

F Nature of Capital Budgeting

The nature of capital budgeting is discussed below :

(i) **Capital Expenditure :** In Capital Budgeting, decisions are taken for incurring capital expenditure. The expenditure which is incurred in order to get returns over a long period in future is called Capital Expenditure. The expenditures which are incurred for purchas-

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ing a new plants, replacement of fixed assets, accepting a new project etc. are the examples of capital expenditure.

(ii) **Return :** Capital Budgeting decisions are taken for getting benefits for a long-term in future. Such benefits are known as returns. These benefits may be either in form of increased revenues or reduced costs. As for instance, the amount of revenue is increased by ₹ 50,000 as a result of undertaking a new project. This amount of ₹ 50,000 will be the return of that new project. Suppose, the cost of production is reduced by ₹ 10,000 as a result of installation of a new plant in place of an old plant. In this case, the reduction of cost of ₹ 10,000 will be the benefit for such replacement expenditure.

(iii) **Decision making process :** Capital budgeting is a decision-making process by which decisions are taken whether a proposed project should be accepted by a firm or not. The investment decisions of a firm like expansion of a long-term fixed asset, acquisition, modernisation, replacement etc. are included in capital budgeting.

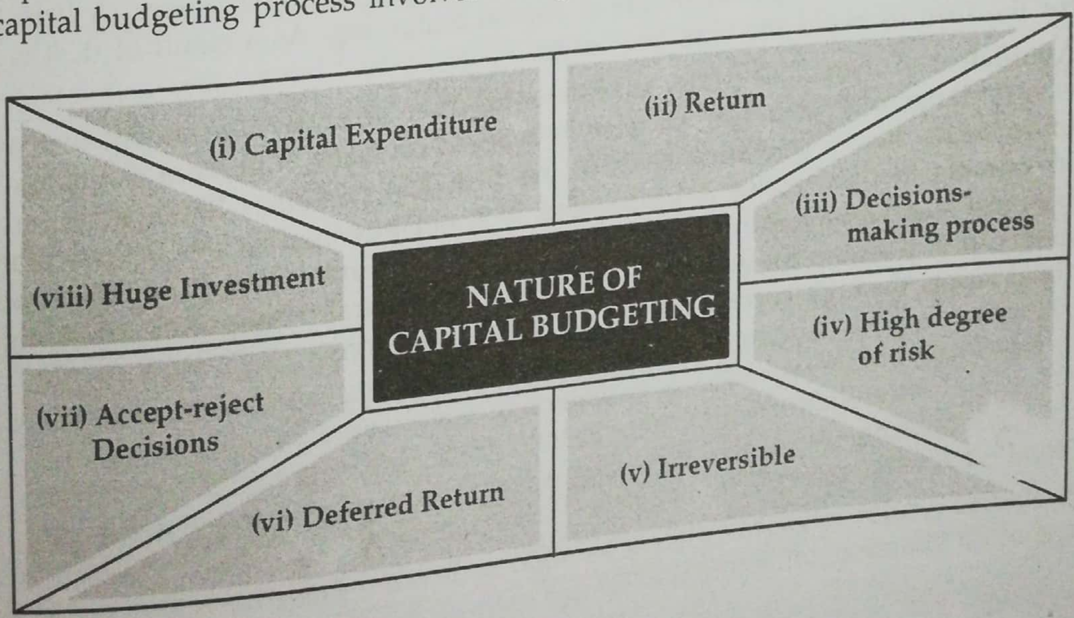
(iv) **High degree of risk :** The effect of capital budgeting decision remains in force over a long period. Long period is uncertain *i.e.,* many things may be changed in long-term, which can not be predicted before hand. So, the investment decision which is taken in capital budgeting is high risky.

(v) **Irreversible :** The investment decisions which are taken in capital budgeting is irreversible. A plant or capital goods once purchased, the invested money can not be obtained back by selling them easily or without causing a substantial loss because the market of such type of capital goods is very limited.

(vi) **Deferred Return :** In capital budgeting, decisions are taken for incurring capital expenditure in order to get returns over a long period. But such returns can not be obtained immediately with the incurring of the expenditure. In most of the cases, there is a long time lag between the initial outlay and the anticipated returns.

(vii) **Accept-reject Decisions :** Capital budgeting is made for taking decision in respect of whether a proposed project will be accepted or rejected. So, it is an accept-reject decision.

(viii) **Huge Investment :** Capital budgeting decisions are taken for collecting or replacing capital assets. A large amount of money is required for such type of programme. So, the capital budgeting process involves a large investment in capital assets.



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G Importance of Capital Budgeting

Capital budgeting decision is very important to a firm. Because, if any wrong decision is taken in the capital budgeting, the firm will have to bear a heavy loss in future. It is very important to the firm because of the following reasons :

(i) **Long-term Effect :** The effect of capital budgeting remains in force over a long-period. So, if any wrong decision is taken by a firm through its capital budgeting process, then the firm may suffer loss over a long period and as a result of it, the existence of the firm may be in danger. On the other hand, if correct decision is taken, then a lot of profit may be earned. So, it is necessary to think judiciously before taking such decision.

(ii) **Heavy Investment :** A large amount of money has to be invested for incurring long-term capital expenditure. So, a firm has to take up sufficient care before taking such investment decision and it has to take advance arrangement for procuring the required funds in order to finance the capital expenditure.

(iii) **Irreversibility :** The investment decisions which are taken in capital budgeting are irreversible. A plant or capital goods once purchased, the invested money can not be received back by selling them easily or without causing a substantial loss because the market of such capital goods is very limited.

(iv) **Use of Scare Resources :** Money is a scare resource. So, it is necessary to make the best use of it. If money is invested in a project by taking wrong decision, then a firm does not only suffer losses, but it also may be deprived of the profits that could be earned from an alternative project. So, at the time of investing money in a project, sufficient care needs to be taken.

(v) **Complexity :** With a hope of getting return in future, capital budgeting decision is taken for incurring capital expenditure. So, before taking such investment decision, it is necessary to forecast regarding future. Because of uncertainty, the expected return may not be obtained. The capital budgeting decision becomes complex due to its uncertainty. So, special method of appraisal needs to be applied before taking such capital budgeting decision.

(vi) **Avoidance of Losses :** Capital budgeting is necessary to avoid losses. A firm can take correct decision with the technique of capital budgeting. As a result of it, it is possible for the firm to avoid the expected losses.

(vii) **Avoidance of over- and under-investment :** Over or under-investment in fixed assets is very dangerous for a firm. Because, unwanted investment in fixed assets may lead to unnecessary heavy operating costs to the firm. On the other hand, if the amount of investment in fixed assets is inadequate, it is not possible for the firm to manage the business successfully. So, every firm should invest accurate amount of funds in the fixed assets. It is possible for a firm to determine the accurate amount of investment in the fixed assets through correct capital budgeting decisions.

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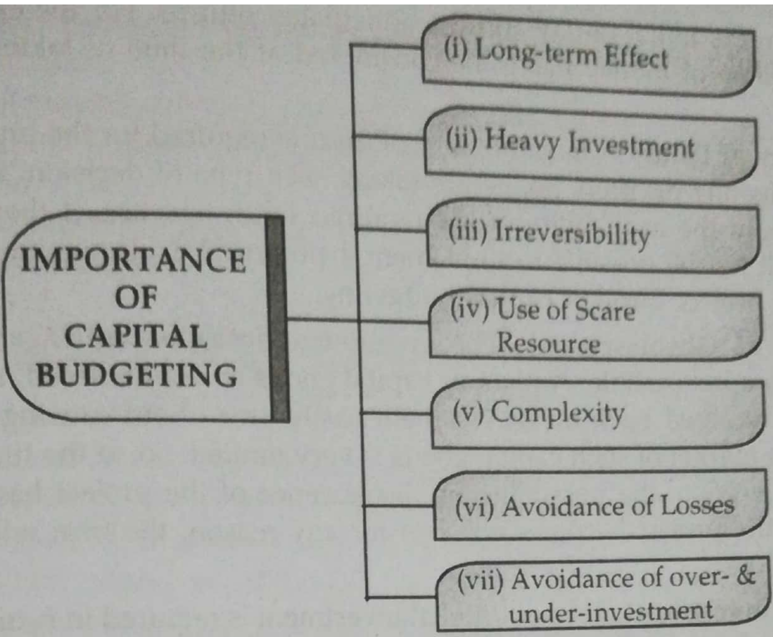

H Objective of Capital Budgeting

A company needs to have capital-budgeting decisions under the following situations—

(i) To accept a new project.
(ii) To decide the replacement of an old project with a new project.
(iii) To decide the replacement of manual process with a mechanised one.
(iv) To select the best project out of more than one alternative projects.
(v) To replace the old machine with a new improved machine.
(vi) To take decision for expansion and modification of the firm.
(vii) To choose among the alternative sources of acquisition of a fixed asset either by buying or leasing.

I Factors Influencing Capital Budgeting Decisions

At the time of taking capital budgeting decision, some important factors have to be considered. These factors are called **Factors Influencing Capital Budgeting Decision.** These are—

(i) **Cash Flow Forecasting :** The success of capital budgeting decision depends on correct forecasting of cash flow. Because, outflow of cash takes place for undertaking a project and inflow of cash takes place after implementation of the project. So, if the inflow and outflow of cash are not forecasted correctly, there will be mistake in the capital budgeting decision. Therefore, in order to arrive at correct decision, correct forecast of cash flow is needed.

(ii) **Urgency :** Sometimes a firm has to undertake a new project or expand its existing project on urgent basis for maintaining its existence or for satisfying the increased demand for its product or for avoiding substantial amount of potential losses. Under these circumstances, it is not possible to evaluate a project by judging the profitability. So, at the time of taking capital budgeting decision, the matter of urgency should be kept in mind.

(iii) **Time Value of Money :** With a hope of getting return in future, capital expenditure decision is taken at present through capital budgeting. So, normally there is a long time

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lag between the initial outlay and the anticipated returns. For the existence of this time lag, time value of money has to be considered at the time of taking capital budgeting decision.

(iv) **Availability of Fund :** A large amount of fund is required for the implementation of the capital budgeting decision. So, before taking such type of decision, it is necessary to be ensured about the availability of the required fund; because, if there is inadequacy of fund, it will not be possible to implement a proposed project even if decision is taken to accept a project through capital budgeting.

(v) **Possibility of Obsolescence :** The investment decisions which are taken in capital budgeting are irreversible. A plant or capital goods once purchased, the invested money can not be received back by selling them easily or without causing a substantial loss; because, the market of such capital goods is very limited. So, at the time of taking capital budgeting decision, the possibility of obsolescence of the project has to be considered; because, if the project becomes obsolete for any reason, the firm will have to accept a substantial loss.

(vi) **Additional Investment :** If an additional investment is required in future in order to keep intact the production capacity of a project, the additional investment has to be considered at the time of taking capital budgeting decision; if the matter is ignored, the accepted decision will be wrong and as a result of this, there may be a loss to the firm instead of profit.

(vii) **Selection of Suitable Method :** There are different methods of appraisal of capital budgeting. Out of these methods, which one is suitable for the proposed project that should be determined properly; otherwise the accepted decision may not be fruitful. For example, the pay-back period method is very useful in the case of evaluation of those project where technological development takes place vary rapidly and the chance of quick obsolescence of the machine is very high, because, under this method, that project is accepted whose pay-back period is least.

(viii) **Legal Restriction :** Whether there is any legal restriction or not that also has to be considered at the time of making capital budgeting for accepting a proposed project. For example, if suitable arrangement is not adopted in the factory of production of sponge iron for the prevention of pollution, the licence of the factory is cancelled. So, at the time of taking capital budgeting decision for this type of project, the matter of prevention of pollution has to be considered.

(ix) **Risk and Uncertainty :** At the time of taking capital budgeting decision, the estate of risk and uncertainty has to be considered; because, a reasonable profitable but certain and less risky project is more acceptable than a high profitable but uncertain and more risky project.

(x) **Future Return :** Return is not received from a project immediately with making investment in that project. Money is invested in a project with an expectation of getting return in future. So, when there is possibility of getting sufficient return from a project, only then the project is accepted. For this, at the time of taking capital budgeting decision, it is necessary to be ensured about the adequacy of future return of the proposed project.

(xi) **Cost of Capital :** The minimum rate of return which is expected by the investors on their investment is called **Cost of Capital**. So, at the time of taking capital budgeting decision, whether a proposed project will fulfil the expectation of the investors or not that has to be judged. If it is found that the project will fulfil the expectation of the investors, only

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then the project should be accepted, otherwise not. Thus, the cost of capital is relevant in capital budgeting decision.

(xii) **Research and Development Project :** Research and Development Project has an especial impact on capital budgeting decision. This type of project is accepted for the long live of the firm. So, a firm has to accept this type of project even if it is not profitable. Thus, the aspect of profitability does not get an special importance in the evaluation of the research and development project.

J Essential Qualities of a Good Capital Budgeting Method

A good capital budgeting method should have some essential qualities. These are—

(i) *The method should be such that by which it is possible to get a clear idea about the project that should be accepted from more than one alternative project.*

(ii) *The method should be such that by which different projects can be arranged among themselves according to their relative acceptability.*

(iii) *The method should be easy to understand and simple to use.*

(iv) *It should be less costly and less time consuming.*

(v) *It should consider all cash flows to determine the true profitability of the project.*

(vi) *It should consider the time value of money.*

(vii) *It should recognise the fact that early cash flows are preferable to later ones and bigger cash flows are preferable to smaller ones.*

(viii) *It should measure the costs and benefits on the basis of cash flows instead of book profit.*

K Different Types of Decisions in Capital Budgeting

At the time of capital budgeting, a firm has to confront basically with three types of decisions making; such as—

(i) **Accept-reject Decision :** Whether a project will be accepted or not that is the fundamental decision of capital budgeting. If it is decided in a capital budgeting technique that a project will be accepted, only then the firm makes investment into that project. On the other hand, if a project is rejected by the capital budgeting technique, the firm does not make any investment into the project. Generally, the projects which have greater expected rate of return than the cut-off rate, those are accepted; and the projects which have smaller expected rate of return than the cut-off rate, those are rejected.

Tutorial note

Cut-off rate refers to the minimum rate of return which is expected by the investors on their investment. Thus, it is the desired rate of return or cost of capital. On the other hand, expected rate of return refers to the rate of return which is expected to be earned after implementation of the proposed project. In capital budgeting, accept-reject decisions are taken on the basis of cut-off rate and expected rate. For example, if cut-off rate (i.e., the minimum rate of return which is expected by the investors on their investment) is 12% and expected rate of return (i.e., the rate of return which is expected to be earned after implementation of the project) is 10%, the concerned project should not be accepted. But if the cut-off rate is 10% and expected rate of return is 12%, the concerned project should be accepted. It can also be mentioned in this context that the cut-off point may also be in terms of period. For example, if the management desires that the investment in the project should be recouped in five years, the period of five years is to be taken as cut-off period.

(ii) **Mutually Exclusive Decision :** Mutually exclusive projects refer to those projects which compete with each other in such a way so that if one of them is accepted, the others can not be accepted. In the case of mutually exclusive projects, the question of taking decision arises only then, when more than one projects are considered as acceptable according to the accept-reject criterion. In this case, decision is taken to select the best alternative project.

(iii) **Capital Rationing Decision :** The technique of making investment of limited amount of capital into more acceptable project(s) is called **Capital Rationing**. When there is more than one acceptable projects in the hand of a firm but it is not possible for the firm to accept all the projects due to inadequacy of capital, this technique is followed for distributing capital among the more acceptable projects. In this case, the acceptable projects are arranged according to their respective ranks on the basis of expected returns and thereafter, only those projects are accepted which are possible to be implemented for the firm by the limited capital. Thus, capital rationing is relevant for those firms which have more than one acceptable investment projects but it is not possible for them to accept all the projects due to insufficiency of capital.

L Steps of Capital Budgeting Process

According to Quirin, a capital budgeting process has four steps; these are—

(i) **Project Generation :** Project generation is the first step of capital budgeting. The proposal of accepting project may be generated from different level or departments of the firm. As for examples—the proposal of replacement of an old machine with a new improved machine may come from the workers of the factory, the proposal of production of a new product may come from the selling department or the proposal of expansion of the factory may come from the Board of Directors of the factory. What ever may be the source of generation of a project, that should be considered by the top management of the firm; because, this type of proposal is very important to the firm.

(ii) **Project Evaluation :** After generation of a project, that should be evaluated properly. There are two phases of evaluation of project. One is the forecasting of costs and benefits, which must be measured in terms of money value and the other is selection of a suitable criterion for judging the acceptability of different projects. For forecasting costs and benefits, the accounting for estimated incomes and expenditure should be performed by such a team of experts that they do not have any personal interest in the proposed project; because, if their personal interest is involved in the proposed project, the estimated income and expenditure account may be influenced by the personal interest of them. Again, at the time of selection of criterion, such a criterion should be adopted so that it is consistent with the objective of the firm.

(iii) **Project Selection :** The third step of capital budgeting is to select the best project out of the likely projects. At the time of selection of project, the amount of required investment and it's times, the amount of returns and its times, the rate of return, cost of capital etc. have to be considered with a special care.

(iv) **Project Execution :** The last step of capital budgeting is the project execution. In this step, the selected project is implemented. For the implementation of the project, the required finance has to be raised and whether the alloted money is spending properly or not that should be noted carefully. A committee may be formed for looking after whether the project is implementing properly or not, or the top management itself may looks after this matter. In order to review the progress of the work of implementation of the project, the top management should collect monthly or quarterly report from them who are engaged in the work of implementation of the project.

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