1. INTRODUCTION

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1.1 Introduction:

The capital budgeting decisions assume vital importance due to its great impact on corporate profitability. Even the most efficient firms face problems to the extent of bankruptcy, if they make few such wrong decisions. This requires the need for thoughtful, wise and correct capital expenditure decisions. What have been the capital budgeting practices followed by business firms in the corporate sector of India, constitutes the subject matter of my thesis.

1.2 What do we mean by investment?

The essence of investment is to: ‘forgo present consumption of resources in order to increase the total amount of resources which can be consumed in the future’. Alternatively an investment can be viewed in terms of: ‘making an outlay of cash now in the expectation of extra cash coming in the future’¹.

The objective of an investment decision is to acquire an asset (real or financial) for less than its value, this way corporate or personal wealth can be increased. Acquiring an asset for at least its value will maintain wealth or value. From the corporate firm’s point of view the financial manager’s objective should be to invest in projects which add to corporate and shareholder value.

For a wealth-maximizing business enterprise, the most common form of investment is in real corporate assets (i.e. land, buildings, plant & machinery etc.) Such assets are very important for most firms as they represent the largest financial investment and are the key earning assets of the firm².

¹ Dixon, R. Investment Appraisal, CIMA 1994
² McMENAMIN JIM, Financial Management (An Introduction), OXFORD University Press, pg. 350-351
1.3 Capital Expenditure/ Capital Budgeting:

When a business buys fixed assets, or when it spends money to increase the value of its existing fixed assets, this expenditure is called capital expenditure (CAPEX). Fixed assets can be tangible fixed assets such as land, buildings, plant & machinery or intangible fixed assets such as brands, goodwill, patents and copyrights. Capital items are long-term and have an enduring influence on the profit-making and wealth-creating capacity of a business.3

Capital budgeting is a vital managerial tool for investment decision-making. One of the major duties of a financial manager is to choose an investment from various alternatives considering factors such as cash flows and rates of return. Therefore, a financial manager must be able to decide whether an investment is worth undertaking and be able to choose intelligently between two or more alternatives. To do this, a sound procedure for evaluating, comparison, and selection of projects is needed.

In the form of either debt or equity, capital is a very limited resource. There is a limit to the volume of credit that the banking system can create in the economy. Commercial banks and other lending institutions have limited deposits from which they can lend money to individuals, corporations, and governments. In addition, the RBI requires each bank to maintain part of its deposits as reserves. Having limited resources to lend, lending institutions are selective in extending loans to their customers. But even if a bank were to extend unlimited loans to a company, the management of that company would need to consider the impact that increasing loans would have on the overall cost of financing.

In reality, any firm has limited borrowing resources that should be allocated among the best investment alternatives. One might argue that a company can issue an almost unlimited amount of common stock to raise capital. Increasing the number of shares of company stock, however, will serve only to distribute the same amount of equity among a greater number of shareholders. In other words, as the number of shares of a

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3 ibid
company increases, the company ownership of the individual stockholder may proportionally decrease.

The argument that capital is a limited resource is true of any form of capital, whether debt or equity (short-term or long-term, common stock) or retained earnings, accounts payable or notes payable, and so on. Even the best-known firm in an industry or a community can increase its borrowing up to a certain limit. Once this point has been reached, the firm will either be denied more credit or be charged a higher interest rate, making borrowing a less desirable way to raise capital.

An outlay of funds made in the expectation of receiving future benefits is called a capital expenditure. Included among capital expenditures would be outlays for plant expansion, equipment replacement, advertising, research and development etc. To make the distinction between “capital” and “current” expenditures, we shall define “capital” expenditures as those expenditures whose benefits extend beyond one year, although the methods of analysis could be applied to shorter periods of time.

There is no phase of business management where decision-making has a more profound effect on the long-run welfare of a company than in the area of capital expenditures. It is one of the management’s most important tasks to see that a company devotes adequate attention to the question of how a company shall spend capital funds.

1.4 Capital Budgeting defined:

Capital budgeting involves the making of investment decisions related to assets. The “capital” in capital budgeting refers to the investment of resources in assets, while the budgeting refers to the analysis and assessment of revenue inflows and outflows related to the proposed capital investment over a specified period of time.
Capital budgeting involves “long-term planning for proposed capital outlay and their finances”\(^4\). It is the “process of allocating the financial resources of a business to investment in current and fixed assets in order to maximize the value of a business.”\(^5\) Thus, capital budgeting “involves a current investment in which the benefits are expected to be received beyond ‘one year’ in the future.”\(^6\)

1.5 **Areas of Capital Budgeting Decisions:**

A business organization has to face quite often the problem of capital investment decisions. Capital investment refers to the investment in projects whose results would be available only after a year. The investments in these projects are quite heavy and to be made immediately, but the return will be available only after a period of time. The following are some of the areas where heavy capital investment may be necessary.\(^7\)

i. **Replacement:** Replacement of fixed assets may become necessary either on account of their being worn out or becoming outdated on account of new technology.

ii. **Expansion:** A firm may have to expand its production capacity on account of high demand for its products and inadequate production capacity. This will need additional capital investment.

iii. **Diversification:** A business may like to reduce its risk by operating in several markets rather than in a single market. In such an event, capital investment may become necessary for purchase of new machinery and facilities to handle the new products.

iv. **Research and Development:** Large sums of money may have to be spared for research and development in case of those industries where technology is

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\(^6\) Porwal L.S.: Capital Budgeting in India, Sultan Chand & Sons, pg. 1

\(^7\) Maheshwari Dr. S.N., Financial Management, Sultan Chand & Sons, pg. 157-158
rapidly changing. In case large sums of money are needed for equipment, these proposals will normally be included in the capital budget.

v. Miscellaneous: A firm may have to invest money in projects which do not directly help in achieving profit oriented goals. For example, installation of pollution control equipment may be necessary on account of legal requirements. Thus, funds will be required for such purposes also.

1.6 Types of Capital budgeting decisions:

A firm may have several investment proposals for its consideration. It may adopt one of them, some of them or all of them depending upon whether they are independent, contingent or dependant or mutually exclusive.8

i. Independent Proposals:

These are proposals which do not compete with each other in a way that acceptance of one precludes the possibility of acceptance of another. In case of such proposals the firm may straight away “accept or reject” a proposal on the basis of minimum return on investment required. All those proposals which give a higher return than a certain desired rate of return are accepted and the rest are rejected.

ii. Contingent or Dependant Proposals:

These are proposals whose acceptance depends on the acceptance of one or more other proposals. For e.g. A new machine may have to be purchased on account of substantial expansion of plant. In this case investment in the machine is dependant upon the expansion of the plant. When a contingent investment proposal is made, it should also contain the proposal on which it is dependant in order to have a better perspective in the situation.

8 ibid
iii. **Mutually Exclusive Proposals:**

These are proposals which compete with each other in a way that the acceptance of one precludes the acceptance of other/s. For eg. If a company is considering investment in one of two temperature control systems, acceptance of one system will rule out the acceptance of the other. Thus, two or more mutually exclusive proposals cannot be accepted simultaneously. Some techniques have to be used for selecting the better or the best one. Once it is done, other alternatives automatically get eliminated.

1.7 **Rationale of Capital Expenditures:**

i. **Expenditure made to reduce costs:**

Expenditures in this class do not affect the quantity of production or sales of the firm but are intended to reduce or minimize the cost of production. This type of expenditure arises in the choice of production process (e.g. capital intensive or labour intensive) and in equipment replacement decisions.

ii. **Expenditure made to increase revenues:**

Expenditures for new plant to increase production capacity and expenditures to stimulate demand, either through advertising or through product improvement. Since expenditures in this class are expected to influence the quantity sold, costs as well as revenues must be considered in their analysis.

iii. **Expenditures justified on non-economic grounds:**

The economic rationale for other capital expenditures may be less clear-cut. For example, it is hard to quantify in rupees the benefits which accrue to a company from building recreation facilities for its employees, to provide hospital statement of the costs involved for such type of projects is necessary to make a more reasoned decision.
1.8 Criticalities of Capital Budgeting:

Faced with limited sources of capital, management should carefully decide whether a particular project is economically acceptable. In the case of more than one project, management must identify the projects that will contribute most to profits and, consequently, to the value (or wealth) of the firm. This, in essence, is the basis of capital budgeting. The extent to which a firm will achieve its main objective of maximizing wealth of its shareholders will significantly depend on its capital budgeting decisions.

There are various reasons responsible for these arguments which are discussed below.

i. **Profitability:**

   Capital budgeting decisions affect the profitability of a business firm. It decides the efficiency of working of a firm and its competing position in an industry as they relate to investment in and management of fixed assets. In fact, fixed assets are real earning assets of any company. It enables the firm to manufacture and sale desired product which ultimately yields profits for the firm and in turn wealth for its shareholders.

ii. **Huge amount of funds:**

   Second reason which indicates its significance is huge amount of funds are required to purchase and execute any capital expenditure proposal. Moreover, it has long term impact on the firms’ future returns as all such decisions are long term in nature and it affects firm’s future cost structure. For instance, if a firm is planning for expansion and invests in a new plant, the firm has to keep a provision for substantial amount of funds for recurring fixed costs in terms of direct labour cost, supervisor’s salary, insurance, rent of newly acquired space to install the plant etc.

iii. **Irreversibility:**

   Further, capital budgeting decisions are irreversible in nature. Once the capital budgeting decision is taken and executed it is very difficult to find market for
the asset in case the company feels that decision taken is wrong and they want to change it. Suppose the new project fails or do not generate desired return for some or other reasons, the firm will have to bear the burden of fixed costs for a long time (at least beyond a year) unless it writes off the investment completely which means substantial financial loss to the firm which all firms may not be in a positions to bear even if it’s a well established firm. It may endanger the survival of the firm sometimes.

Therefore, it is apprehended that incorrect investment decisions can adversely affect not only the growth but even the survival of the firm while sound capital budgeting decisions can fetch spectacular return and have the potential to change the fortunes of the weak and marginal firms. This subject has become significantly important in view of current economic scenario of liberalization and globalization where all the firms are more or less operating under very competitive environment with thin profit margin.

The complex and critical nature of such decisions, therefore, requires the need for a thoughtful and judicious approach on the topic. The capital budgeting practices of selected firms in India is the subject matter of my research due to the above mentioned reasons.

1.9 Process of Capital budgeting:

In addition to understanding advanced methods of capital budgeting, there is a need to understand the process by which capital budgeting decisions are made. This is because no matter which method of capital budgeting is being used; the answer is only as good as the underlying assumptions. It is unlikely that the financial manager who makes the decision or who sets up the methodology knows as much about the technical details and assumptions of a project as the engineers and line supervisors involved with the project. The process of capital budgeting has to align the incentives and interests of these employees with those of shareholders.

Capital budgeting is a multi-part activity beginning with the search for potential investment opportunities and culminating in the review of investments undertaken.
The effectiveness of capital budgeting decisions depends upon the soundness of the various activities involved in process of capital expenditure decision which can be divided into the following steps. These are the results of the observations made by Prof. Prasanna Chandra from a sample of 15 large-sized industrial undertakings representing seven industries.

i. Search for investment opportunities

ii. Submission and screening of investment proposals

iii. Preparation of the capital budget

iv. Expenditure – incurrence, and

v. Performance review

i. **Search for investment opportunities:**

The capital budgeting process generally begins with the identification of potential investment opportunities. It is observed that search for large investment opportunities takes place at the top levels of management. The planning body develops sales forecast which helps in setting production targets which, ultimately, helps in identifying required investments in plant and equipment.

For identification of investment ideas it is necessary to;

(a) monitor external environment regularly,

(b) formulate a well defined corporate strategy based on thorough SWOT analysis,

(c) share corporate strategy and perspectives with persons who are involved in the process of capital budgeting, and

(d) motivate employees to make suggestions.

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9 Chandra Prasanna, Capital budgeting in Indian Industries, Indian Management, pg. 11-15
ii. Submission and screening of investment proposals:

The identified investment proposals are usually required to be submitted in a standard format and have to be routed through a specific channel to ensure that the proposal under consideration have been reviewed from all possible angles i.e. production, market feasibility, financial feasibility etc. It helps in creating a climate for bringing about necessary coordination of interrelated activities.

iii. Construction of Capital Budgets:

Once the individual investment proposals are approved by the top management, the responsibility for coordinating these proposals usually lies with a capital budgeting committee which consists of executives from various functional areas. The investment proposals are usually divided into two categories:

a. Capital expenditure required for maintaining and extending existing productive capacity and other facilities. Generally all such expenditures are covered under annual capital budget.

b. Capital expenditure undertaken for creating a distinct unit of business involving large outlays which is referred to as ‘project expenditure’.

For the first category of capital expenditure the multiple review system serves as a screening device while for the second category usually a special group is set up, once the idea is broadly accepted by the top management, to study in depth the proposed project.

The period for which capital budgets are drawn is normally one year. But in case the proposed expenditures involve outlays beyond a year future outlays are also taken into consideration. In firms where numerous investments involve outlays for extended periods, two-year and three-year capital budgets are also prepared. Such long term budgets are subject to change as per the need of the organization.
iv. **Expenditure Incurring Authority:**

The authority to take the decision regarding capital expenditure varies widely at different levels in different organizations. Eg. The works manager might have authority to take such decision up to (say) Rs. 10 lakhs, the production superintendent might have this authority up to say Rs. 1 lakhs etc. But in all organizations investment requiring outlays beyond specific amounts are required to be referred to the top management.

v. **Expenditure Incurrence:**

Once the proposal is properly formulated translating that into concrete project is a difficult, risky and time-consuming task. Any delay in implementation can lead to increase in gestation period of the project which proves to be a costly affair. For timely implementation of the project, the organization can use principle of responsibility accounting. It helps in fixing the responsibility for each part of the project implementation within specific time and costs. The organization can use several network techniques like PERT (Programme Evaluation Review Technique) and CPM (Critical Path Method) helps in proper monitoring of the project implementation process.

vi. **Performance Review:**

Performance review is a feedback mechanism. The post completion audit helps in identifying the individuals with the above average ability in planning and forecasting at the same time it even helps in disclosing some judgmental biases for the project. Though such projects are irreversible in nature, it provides a documented log of experience which can be useful in future capital expenditure decisions.

1.10 **Capital budgeting Techniques//Investment Appraisal Criteria in Practice:**

There are various capital budgeting practices followed by the corporate sector such as;

i. **Non-discounted Cash Flow Criteria:**

a) Payback period (PBP)

b) Accounting Rate of Return (ARR)
ii. **Discounted Cash Flow Criteria:**

   a) Net present value (NPV)
   
   b) Internal rate of return (IRR)
   
   c) Profitability index (PI)

Besides the above mentioned techniques, there are some advanced techniques also such as real options, scenario analysis, Monte Carlo simulation, modified internal rate of return etc. All these methods shall be discussed in detail in chapter 2 being the main focus of this research.

1.11 **Dealing With Cash Flows in Capital Budgeting:**

1. Conventional and Non-conventional Cash flow.
3. Estimating Minimum Required Rate of Return or Cost of Capital.

1. **Conventional and Non-conventional Cash flow:**

A conventional cash flow can be defined as the one where initial cash outflow is followed by a series of cash inflows. So the conventional cash flow is having only one change in the sign of cash flows (i.e., $-+++-+..$ so on). While a non-conventional cash flow changes sign of cash flow more than once during the life of the project (i.e., $-++-+++-$).

2. **Estimating Cash Flows:**

There may exist various alternative investment opportunities and the total capital budget of the firm may be limited. The development of the analytical framework for appraising capital expenditure opportunities facilitates selection of the best projects. The word “best” may be in terms of maximum long-run economic welfare of the firm, maximum sales, maximum sales revenues, minimum average costs etc.

The framework consists of 3 stages: (a) stating the alternatives (b) determining the cash flow patterns resulting from the alternatives, and (c) comparing alternative cash flow patterns.
(a) Stating the alternatives:

All the alternatives under consideration are explicitly stated at the beginning of the analysis. This helps in determining the kind of data to collect and the nature of analysis to be performed.

A decision problem necessarily has at least two alternatives otherwise there is nothing to decide. Examples of decision problems are as follows:

(i) Replacement Decision: A Company is currently using three equipments, which cost Rs. 1 lakh each and are 70 per cent depreciated. They can be replaced with one equipment costing Rs. 2 lakhs. It is expected that at normal activity, the new machine would save Rs. 40,000/- a year in labour, maintenance and so on, for a period of five years. Should the machine be replaced?

(ii) Size of Plant: A company must choose between a small plant, which would cost Rs. 10 million, and a large plant, which would cost Rs. 15 million. It is found that the small plant would yield a return of 20% and the large plant 17%, which plant should be chosen?

(iii) Lease or Buy: A company can either buy data-processing equipment or rent it. The cost of the equipment is Rs. 30 lakhs and the rental fee is Rs. 1 lakh per month. It is estimated that improvements will make this equipment obsolete within 5 years, should the company lease or buy?

(b) Determining the cash flow patterns:

Since a capital expenditure represents a cost incurred in the anticipation of future benefits, it is necessary to collect and organize data regarding the costs and benefits associated with the proposal. For the most part, these costs and benefits will take the form of cash flows into and out of the company. The capital expenditure itself, for example will be an outflow of funds, while revenues resulting from an expansion project will be in the form of cash inflows.
Type of cash flows: There are three main categories of cash flows which may often be identified in capital expenditure analysis. They are:

i) Cash flows which vary on a per-unit basis: Mainly prices and variable costs.

ii) Cash flows which vary on a per-year basis: Mainly overhead items which are fixed relative to the volume of production but which do depend upon which alternative is selected and hence are relevant to the decision, for example, cost of additional supervisor if a special-purpose machine is bought.

iii) "Lump-sum" cash flows: The principal item in this category is the investment required for each alternative, which varies neither “per unit” nor “per year”. Lump-sum expenditure for major overhaul required at some future date might be another example.

To use a more familiar example, we might consider the expenses associated with owning and operating a car. The costs of petrol, oil, tiers, and repairs vary, at least approximately, on a per-unit basis i.e. proportionately to mileage, registration, insurance and road tax expenses, however, vary on a per-year basis while the initial cost of the car represents a lump-sum investment.

Measurement of Cash Flows:

   a) Accounting amortizations
   b) Interest payments
   b) Working capital
   c) Income taxes

a) Accounting amortizations:

When a firm makes a capital expenditure, it is the common practice of accountants to “capitalize” this expenditure i.e. record its cost as an asset. The cost is then “amortized” over the periods during which the benefits of the expenditure are expected to occur - by charging a portion of the cost as an expense. For example, when a special-purpose machine is bought for Rs. 1,00,000 it is recorded as an asset.
If the life of a machine were four years, then using straight-line method for
depreciation, an amount of Rs. 25000 would be written off as “depreciation expense”
in each of the four years. Depreciation and similar accounting amortizations of
capital expenditures are not cash outflows though they are recorded as expenses on
income statement. The cash outflow took place at the time the capital expenditure
was made, and amortization represents only the accountant’s subsequent attempt to
allocate this expenditure to the benefiting time period. For this reason, it would be
 incorrect to include as costs in a given analysis both the initial outlay and the
subsequent amortization of it. However, we shall see in the subsequent paragraph (d)
that accounting amortization does have income tax effects which result in relevant
cash flows.

(b) Interest payments:

Cash disbursed for interest is normally excluded from the cash flow computation used
in analyzing investments. The interest factor is taken into consideration by the use of
the present value procedures. To include the cash disbursement for interest would
result in double counting also.

(c) Working capital:

In addition to investment in longer lived assets, many capital expenditure proposals
will involve investment in working capital for additional inventories of raw materials,
work-in-process, finished goods and additional accounts receivable. If this is the case
then the additional working capital requirement should be considered as a cash
outflow at the inception of the project. At the termination of the project, the release of
working capital should ordinarily be treated as cash inflow.

(d) Income Taxes:

When capital expenditures are being considered, it is no longer true that after-tax
profitability is proportional to before-tax profitability. The time pattern of taxable
earnings, so that, when the time value of money is taken into account, income taxes
will affect the relative desirability of the alternatives under consideration.
Suppose we are considering the purchase of a new piece of equipment that is expected to have no salvage (terminal) value at the end. If there were no income taxes, then the cash flows resulting from the use of the equipment could be estimated by subtracting the additional cash outflows required to operate the equipment from the additional revenues that result from acquiring it. That is,

Before-tax cash flows = revenue – cash outflows                   \( (1) \)

It is necessary to subtract the additional income-tax liability that occurs because of the investment.

After-tax cash flows = revenues - cash outflows - income tax       \( (2) \)

Or,

After-tax proceeds = revenues – expenses other than Depreciation - income tax \( (3) \)

The income tax liability is computed by applying the income tax rate to the additional taxable income. One of the allowable deductions for tax purposes is the depreciation of the investments.

Now,

Income tax = (tax rate) x (taxable income) \( (4) \)

Income tax = (tax rate) x (revenues - expenses other than depreciation - depreciation) \( (5) \)

Substitute equation (5) in equation (3) and simplify.

After-tax proceeds = \((1-\text{tax rate}) \times (\text{revenues-expenses other than depreciation}) + (\text{tax rate}) \times (\text{Depreciation}) \) \( (6) \)

Equation (6) highlights the fact that the cash flows of the period are increased by the amount equal to allowable depreciation times the tax rate.

In India, the Income Tax Authority permits depreciation on written down value method (WDV) and tables are available to calculate present value of depreciation at different rates.
(c) Comparing Capital Expenditure Alternatives:

There are various methods or techniques for comparing alternative capital expenditures, which help in selecting the best investment projects. Specifically, these techniques help in:

i) Accept-reject decision i.e. to accept or reject a particular investment proposal.

ii) Ranking mutually exclusive investments i.e. if a company can accept only one project out of three then which one to select.

Assumptions:

Various techniques to be discussed assume the following:

i) All cash flows occur instantaneously, usually at the end or beginning of a period (i.e. point input-point output and their coincidence)

ii) Interest is compounded annually

iii) Degree of certainty attached to each project is identical

3. Estimating Minimum Required Rate of Return or Cost of Capital:

The existence of a business mainly depends on the regular supply and availability of funds at economical cost. There are different sources of funds such as: equity share capital, preference share capital, retained earnings, debentures and other loans and advances. The funds requirement differs from organization to organization. As the financial decisions within the company are recognized to be the critical issues, the emphasis on decision-making has gained more acceptances in recent years with the increasing belief that sound capital budgeting procedures require accurate measurement of the cost of capital. Thus, the measurement of the cost of capital or minimum required rate of return plays a key role in financial management.

The cost of capital means a cut-off rate/hurdle rate/target rate for the allocation of capital to investment projects. Theoretically, it is the rate of return on a project that
will leave unchanged the market price of the stock.\(^{10}\) Thus, the cost of capital is a composite, a weighted average, of the different kinds of capital a company uses. The cost of specific source of finance may be defined as the discount rate that equates the present value of the funds received by the firm, net of underwriting and other costs, with the present value of expected outflows. These outflows may be interest payments, repayment of principal or dividends. Thus, the explicit cost of a specific source of financing can be determined by solving the following equation for \(K^{11}\)

\[
I_0 = \frac{C_1}{(1 + K)^1} + \frac{C_2}{(1 + K)^2} + \frac{C_3}{(1 + K)^3} + \cdots + \frac{C_n}{(1 + K)^n}
\]

Where,

- \(I_0\) is the net amount of funds received by the firm at time 0
- \(C_t\) is outflow in period \(t\); and
- \(n\) is the duration over which the funds are provided

Thus, the cost of capital is the minimum rate of return which will maintain the market value per share at its current level. In other words, the cost of capital represents a standard for allocating the firm’s investible funds in the most optimum manner.\(^{12}\)

The concept of cost of capital plays a significant role in the field of finance. It greatly helps in allocating capital funds within a firm and serves as a yardstick for measuring the profitability of investments.\(^{13}\) It also helps management in moving towards its target capital structure or an optimum capital structure. It is of fundamental importance since it is a direct determinant of the acceptability of capital budgeting decisions within the individual firm and hence a key determinant of the economy’s aggregate level of investment as well. Financial management has undergone

\(^{11}\) ibid, pg. 215
\(^{12}\) Pandey I.M., Capital Structure and Cost of Capital, Vikas Publishing House Pvt Ltd., New Delhi, 1981, pg. 132
significant changes in recent years. Strong inflationary pressures have pushed interest rates to unprecedented heights and the resulting high cost of capital has led to profound changes in corporate financial policies and practices.

The measurement of cost of capital is quite difficult and also controversial topic in finance. A company must know appropriate cost of capital funds in order to find out whether the projects, products and assets in which the capital is invested are really paying their way or not. If the funds invested earn at least what they are costing to the company, they can be considered as paying for their ways. Different theoretical models have been proposed to measure the cost of capital and there is no unanimity among academicians for the use of a particular method. The following steps are involved in the determination of cost of capital.

1. **Measurement of the cost of specific sources of capital:**

   The first step in the measurement of cost of capital is the measurement of the cost of specific sources of capital as it is necessary for measuring the weighted average cost of capital. It is comparatively easier to compute the cost of debt (Kd) and the cost of preference capital (Kp). The explicit cost of debt can be derived from the above equation by solving for that discount rate, K, which equates the net proceeds of the debt issue with the present value of interest plus principal payments. As the cost of debt is tax deductible, it should be adjusted for the tax effect. Similarly, the cost of preference capital can also be calculated using above equation. The outflows here will be the stated fixed rate of dividend. But the computation of the cost of equity, however, is the most complex and difficult task. With reference to the above equation, the cost of equity is the discount rate (Ke) which equates the market value of equity with the present value of the expected benefits. The expected future benefits can be expressed either in terms of dividends or earnings. There are mainly two models for measuring the cost of equity (i) the dividend model, and (ii) the earnings model. As per the dividend model, the cost of equity is equal to the expected dividend price
ratio, i.e., $Ke = \frac{D}{P}$

Where, $Ke = \text{cost of equity capital}$, $D = \text{the expected dividend per share}$, and $P = \text{the market price per share}$

If growth is taken into consideration then the equation will be as follows:

$$Ke = \frac{D}{P} + g \quad \text{where} \quad g = \text{Growth Rate}$$

As per the earnings model, the cost of equity is measured as a ratio of expected earnings to price, i.e., $Ke = \frac{E}{P}$

Where, $E = \text{Earnings Per Share}$

The dividend model is more logical because it is the dividend which matters for the shareholders and the market value of shares depends on the expected dividend stream. There are some other popular approaches to cost of equity capital are realized yield approach and capital asset pricing model.

2. **Assignment of appropriate weights:**

The second step regarding the measurement of the cost of capital is the assignment of appropriate weights to each component of capital for deriving the weighted average cost of capital. The weights assigned to a particular component of capital will be the relative proportion of that component of capital to the total capital in the capital structure of the company. The weights can be expressed in terms of book value or market value.

3. **Determination of an overall weighted average cost of capital:**

The third step is multiplying the cost of each sources of capital by the appropriate weights and adds the weighted cost of all sources of funds to get an overall weighted average cost of capital.$^{14}$

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$^{14}$ Goyal V.K., Cost of Capital Measurement in Indian Industries, Deep & Deep Publications, pg.3-8
1.12 Framework of the thesis:

This thesis is divided into six chapters including this Chapter 1 (Introduction) which examines the meaning, importance, process, types, rationale, estimating cash flows and cost of capital of capital budgeting. Chapter 2 discusses various techniques/practices of capital budgeting in detail being the main focus of the study. Chapter 3 is devoted to the review of available literature on the topic in India as well as in foreign countries. Chapter 4 provides the research methodology and scope of the study along with the usefulness of the study. Chapter 5 presents primary survey data analysis and major findings of the research. Chapter 6 focuses on measuring the extent of relation the investment decisions in plant and machinery of the company and sales have in explaining the variation in its operating income. The last Chapter 7 is a summary and conclusion of research and their implications, limitation of the study and future scope of the research in this area.

1.13 Conclusion:

The capital budgeting decisions are very significant to the economy of any nation because any changes in the level of capital expenditures have a great impact on the level of business activity. Due to liberalization and globalization, the restrictions on the expansions and diversifications of businesses have been almost removed by removing licensing requirements for many things by the government which is boosting up various business activities. Now a days lot of mergers and acquisitions are taking place by Indian firms with their other expansion and developmental activities. These activities require investment in fixed assets and many experts theoretically claims that use of capital budgeting practices or methods lead to effective and efficient fixed assets investment decisions especially investment in plant and machinery. This aroused my interest in conducting an empirical study of selected companies operating in India for identifying whether they use any capital budgeting methods for investment in fixed assets.