CHAPTER 2

PROJECTS - THE PHASES, RISKS AND TESTS OF VIABILITY

2.0 Introduction

This chapter deals with the various phases of a typical project, the risks associated with the same and the conditions that are to be looked into to ensure its ability to survive. There are some basic differences between organisations set up for project implementation and those meant for carrying out routine operations. An organisation structure is designed to achieve the desired result with least friction among the members of the team forming part of the same. It is the people, with a variety of skills and expertise at their disposal, who implement the various tasks in an organisation. All such activities need to be channelled so that the efforts are properly co-ordinated, controlled and monitored.

The basic principles of organisation can be broadly classified as planning, implementation, co-ordination, and control. Delegation and feedback systems are essential to ensure that the basic assumptions and principles are adhered to. Procedures also play a vital role in determining the way in which the activities are to be performed in an organisation.
While the basic rules for the administration are nearly the same in an on-going organisation as well as in project management, there are some differences in the management structure.

Setting up and implementation of projects involves a variety of risks. In an uncertain world profit cannot be realised without exposure to risk. There are some risks which can be predicted with reasonable accuracy, whereas, there are others which cannot be reasonably estimated. The risk accompanies investment decisions because, we cannot anticipate the occurrence of future events with certainty and hence can only make projections with due reservations.

The desirability of a project is critically dependent on the risk characterising it. The factors that are usually considered in the assessment of risks are -

(a) Vulnerability to business cycles,
(b) Technological changes,
(c) Competition from substitutes,
(d) Governmental control over price and distribution, and
(e) Currency Exchange Risk.

The ability of a project or a corporate entity to survive depends on many factors that could be at the input level, processing level or the output level. The overall environment is also a determining factor. Thus,
material, money and market generally determine the conditions of success apart from stable economic and political conditions at the domestic as well as international levels. It would be the endeavour of any professional management to optimise the use of available resources. The optimisation process is continuously done in an organisation so that the overall objectives are achieved as nearly as possible despite deficiencies in some areas.

There are many unexpected factors or events that tend to threaten the viability of a project. The seeds of business failure are sown in the early stages of planning and it is essential to recognise areas of potential failure as early as possible. An alert management anticipates many of them and prepares contingency plans to counteract them. This requires a systematic planning and also the determination of parameters and standards in all key areas with necessary tolerance limits. These parameters specify the desirable results to be achieved and also act as indicators of deviations from the required standards. The purpose of these parameters and standards is to alert the management in the various functional areas to test as well as to protect, with necessary timely corrective action, the overall viability of the project.

2.1 The Phases of a Project

Normally a project goes through three phases which can be
identified as the evolution, implementation and the operational phase. Strictly speaking, the operational phase is outside the scope of the project activity. However, for the purpose of winding up of project activity, capitalisation and the preparation of the accounts, operational phase needs to be considered as a part of project activity. Each of the above phases requires different types of organisation and management which we shall discuss now.

2.1.1 Evolution Phase

This phase is like crystal ball gazing. No clear vision emerges about the proposal, but the activity is continued with vigour, propelled by the ambition for growth of the enterprise. A number of proposals are reviewed by the firm during the period. While some firms keep an open time for the selection of the proposal, some work to meet a time target. There are merits and demerits in both the above. While time pressure puts a ceiling on the selection activity, there may be a tendency to select some project by sacrificing some of the objectives. On the contrary, if there is no such time-bound activity, the entire process may drift to naught. Therefore, a careful balancing of selection time is required. In these circumstances, what is needed is a flexible organisation of talented and able people who can share their views openly, so that, useful
ideas of action can take shape without any constraint. The members of this organisation should have a basic sense of economy, industry and a strong business sense. Once a clear goal has emerged the exercise to translate the same into a project can be done. At this stage, the services of a professional and one or two staff members of the organisation can be employed to prepare an initial feasibility report. Depending on the resources and opportunities available, there may be several proposals which may need to be quantified for decision making purposes. A number of techniques are available for the selection of a project from among various equally attractive ones. Having selected a project that satisfies the promoter's aspirations, there will be a need to prepare a detailed project report (DPR).

Depending on the size of the investment and the data to be collected and analysed, a core team for the project is designated by the promoter of the project. This team is known as Corporate Planning Department in most companies. This team should have expertise on technical, commercial, financial and marketing areas so that the feasibility of the proposal is thoroughly worked out from all angles. The outcome of the study may be in the form of a SWOT analysis highlighting the various factors, which will enable the promoter to decide the next course of action.
If the resources such as men, materials, equipment, and money are readily available, the project activity can move into the next phase viz., implementation. Otherwise, all the above resources have to be organised according to a definite plan and within a time limit in order to enter into the implementation phase. In this interim period, the activities are different from normal operations. In fact, it is a hectic period of simultaneous activities in many directions. With all the pressures, there is also a sense of satisfaction in watching the project spring into reality.

2.1.2 Implementation phase

The implementation phase of a project is a very vital phase. The progress and completion of the project are meticulously planned so that the achievement of the goal viz., completion of the project, is within the specified time limit. Normally the planning and the PERT charts are limited to the physical activities. However, it is not uncommon to prepare such charts for the raising of resources, mobilisation of people etc. Timing is the essence of all the above activities and hence a continuous review is important. This is to ensure that the project cost is maintained as per plan.

Usually a leader is identified for the implementation phase. The sole aim of the project leader is to implement the project within the time frame and cost. Many a time it is
not possible to have a hierarchical type of organisation at this phase as the different tasks have to be assigned to various groups and changes may also be warranted within a short span of time. Thus, a pure finance executive may have to look after the work relating to procurements as well as personnel selection and administration. An engineer may have to manage the payroll of casual employees and construction workers with the help of some junior accountants. A design engineer may be required to receive technocrats from abroad, take care of their needs and also work ably along with them.

In a formal organisation the different functions like Finance, Purchase, Administration, Technical and Public relations are well segregated. This, however, does not mean that during project implementation these specialists are not required. It is just that the work requirements during this phase call for wide flexibility in their allotments. Further there has to be an extra awareness to utilise the resources available to the maximum in order to contain project cost. Naturally, then, a formal organisational structure with well-defined hierarchical relationship can only be a hindrance to the project work. Once this vital phase of a project is sailed through, the project is ready to launch into the next phase viz., the operational phase.

2.1.3 Operational Phase

The final phase of a project that has passed through the
first two is the operational phase when the project is on full stream after trial runs. The transition time between the implementation phase and the operational phase is very important because it is the crucial time during which all the activities culminate into a new form. Barring unforeseen problems, this is a satisfying period for the group of people involved in the execution and commissioning, working with a lot of enthusiasm and anxiety, to watch their efforts come to fruition. At this point, cost considerations recede to the background and time factor becomes all important. The team solely concentrates on the goal which is early completion of the project and the attendant benefits. When the commissioning is finally over, activities gradually recede towards a slower pace. A new set of operations emerge, which need to be nurtured for continued future growth. A formal organisation makes a meaningful entry into the system. New positions of responsibility are assigned to the various members of the team in conformity with their disciplines. At first, each person may not have a suitable opening and new people may have to be recruited to handle certain key operations such as treasury, raw material, procurement and industrial relations. In an ongoing organisation it is vital that these functions are well defined and well headed to achieve the purpose of the organisation. However, all the members
of the project team can be absorbed into the organisation over a period of time.

Thus, the organisation and reporting structure during a project stage and a normal operational stage differ in many ways. These can be summarised as follows:

<table>
<thead>
<tr>
<th></th>
<th>Project</th>
<th>Normal Organisation</th>
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</thead>
<tbody>
<tr>
<td>a. Time horizon</td>
<td>has a beginning and an end</td>
<td>has a beginning but later assumed to be continuous</td>
</tr>
<tr>
<td>b. Goals/Objectives</td>
<td>Emphasis is on project completion</td>
<td>Emphasis is on Business plan and targets</td>
</tr>
<tr>
<td>c. Cost</td>
<td>Cost should be monitored to avoid overruns</td>
<td>Cost is standardised for optimal use</td>
</tr>
<tr>
<td>d. Organisation</td>
<td>Formal to informal with inbuilt flexibility</td>
<td>Formal organisation desirable</td>
</tr>
<tr>
<td>e. Line and Staff Function</td>
<td>Flexible</td>
<td>Needs to be defined clearly</td>
</tr>
<tr>
<td>f. Progress Reports</td>
<td>Continuous monitoring &amp; feedback</td>
<td>Monitored by periodic reporting system</td>
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It can be observed from the above that the evolution of a project and its subsequent transformation into an organisation passes through various phases. Most of the activities are very crucial and warrant a clear sense of purpose and coordination. Many decisions taken during this time will have long-term impact on the viability of the project. All the same, many of the decisions are taken in
an environment of uncertainty. The accuracy of a profitability estimate is no better than the accuracy of the data on which it is based. If for example, revenue from sales turns out to be less than that forecasted, the project will be less profitable than expected. There are a number of risk factors such as marketing, technological obsolescence, political, legal and financial that accompany a project, not only during its conceptual and implementation stage but also the operational phase.

2.2 Risks Associated with Projects

The words risk and uncertainty are often used synonymously. But risk has reference to a situation where the probability distribution of the cashflows of an investment proposal is known. If no information is available to formulate a probability distribution of the cashflows, then the situation is known as uncertainty. Risk has been defined in very many ways. According to C Van Horne, "Risk can be defined as the possibility that the actual return will deviate from that which was expected". In order to evaluate the impact of the risk on the project, a risk or probability analysis is generally carried out. The risk or probability analysis is a study of the odds of the project earning a satisfactory rate of return and the most likely degree of variability from the base estimate of the rate of return. Usually a sensitivity analysis of the various important
factors is carried out to study the impact on the projected profitability. The purpose of the sensitivity analysis is to determine the factors to which the profitability of a project is most sensitive. The sensitivity analysis should always be carried out to observe the effect of departure from projected values. This enables the decision-maker to assess the degree of exposure arising out of risks under various probabilities.

2.2.1 Classification of Risks

Risks can be broadly classified as:

a) Marketing risk;
b) Obsolescence risk;
c) Political risk;
d) Legal risk;
e) Financial risk; and
f) Currency exchange risk.

We shall discuss each of the above.

2.2.2 Marketing Risk

The ever-changing consumer tastes and requirements make the prediction of demand for many goods a difficult task. Similarly, prediction of the costs of the input materials and the selling prices is also equally difficult. However, reasonable steps can be taken to protect a business against vagaries of the market by conducting a good market research.
Though, this is not a fool-proof cover against the risks, it will impart a degree of certainty in the attainability of the forecasts made.

Market risk analysis is normally carried out under three conditions viz., optimistic, pessimistic and the most likely, with regard to the variables assumed in the profitability calculations for marketing environment and strategy. To achieve this objective, the market analyst requires a wide variety of information and appropriate forecasting methods. The analysis should focus on the following:

- Consumption trends in the past and the present level,
- Past and present supply position,
- Production possibilities and constraints,
- Imports and exports,
- Structure of competition,
- Cost structure,
- Elasticity of demand,
- Consumer behaviour, preferences, intentions etc.,
- Distribution channels and marketing policies in use, and
- Administrative, Technical and Legal constraints.

The risks are very high when the companies need to expand their foreign marketing. These are 7.
(a) Huge foreign debts;
(b) Unstable Governments;
(c) Foreign exchange problems;
(d) Foreign Government entry requirements;
(e) Tariffs and other trade barriers;
(f) Corruption;
(g) Technological pirating; and
(h) High cost of product and communication adaptation.

All these risks have to be carefully assessed before setting up a project because the costs of putting up a plant is so enormous that the entrepreneurs cannot afford to neglect them in the interest of viability.

2.2.3 Obsolescence Risk

In the fast-changing business environment, technology plays a vital part in introducing new processes, materials and design changes. Innovation has no limit. New techniques constantly improve production methods much to the chagrin of the entrepreneurs who have just invested expensively in the old ones. With the popularity of the new techniques and the appended cost savings, old methods are given up and are no longer useful. Thus, obsolescence renders the existing plant, machinery etc., uneconomic before it is worn out fully because there are more and better ways available. Hence, before embarking upon projects with huge outlays, it would be advisable to make a survey of the technology
available and also to investigate the likelihood of the current technology being replaced by better ones. The identification of the time at which this is likely to happen is essential because obsolescence of technology can take place at any point in the project life such as during its evolution, implementation or the post-completion stage. While the decision can be reversed during the evolution stage, it becomes more difficult to abandon the project in midway because of the heavy costs already incurred. However, such a decision of abandonment will be based on the picture that emerges at the time of review. This type of risk is avoidable before embarking upon the venture or during the implementation stage. This risk has greater bearing on the projects which have been completed with old technology at higher costs. The extent to which this risk can be avoided depends upon the quality and timing of the survey of the technology.

2.2.4 Political and Legal Risks

This class of risk arises from the political and legal framework in which the entity is situated. The outbreak of war between countries can abruptly end the execution of projects. Similarly, a declaration or an ordinance may render selling of a product or service as illegal. In the same way, an embargo and repatriation of capital or free trading in foreign exchange or internal strife in a
particular region may upset the calculations made in the viability studies. These events arise due to unforeseen circumstances beyond the control of the implementing agency. However, a thorough study of the political and economic conditions prevailing in a particular area may help to have a correct perspective while taking an investment decision. The project may be proceeded with if the probability of occurrence of adverse events is small. The matter is purely a case of correct judgment on the part of the entity making the investment.

The above risks may also be termed as business risks. Business risk is related to the investment decisions. In formal terms, the risk associated with a project may be defined as the variability that is likely to occur in the future returns from the project. Such a variability is the result of the internal and external environment in which the firm has to operate. Thus, usually, business risk is an unavoidable risk.

2.2.5 Financial Risk

Financial risk on the other hand is associated with the financing decisions or the capital mix of the firm. Two firms exposed to the same degree of business risk can differ with respect to financial risk when they use different forms of financing. A total equity-financed firm will have no
financial risk but when debt is used in the capital structure of the firm, financial risk is added. A financial risk results because of the use of debt as it increases - (a) the variability of the shareholders return; and (b) the probability of insolvency. Financial risk, thus, is an avoidable risk if the firm decides not to use debt in its capital structure.

2.2.6 Currency Exchange Risk

Exchange risk occurs due to unanticipated fluctuations in exchange rates and may alter the intrinsic value of the firm. The change in value may result from gains or losses or currency holdings, changes in the value of the debt, the value of inventory or changes in the value of goods-in-transit. Of potentially greater concern is the effect that changing exchange rates may have on the competitive position of the firm. The firm may find that exchange rate adjustments have altered the market for inputs to the production process or that the market for its products have been materially influenced by the change in the rate of exchange.

Currency exchange risk has been defined in more ways than one. The expressions such as economic exposure, transaction exposure, accounting exposure, translation exposure, and balance sheet exposures have been used by authors on the subject of foreign exchange risk.
The management of currency exchange risk is very important due to the fast expanding global business. Factors that affect movements in exchange rates are those that impact on the demand or supply of the concerned currencies and these come from three basic sources viz., Revenue movements, Capital movements and Reserve movements. All these basic factors are in turn influenced by a host of economic, political, technical and psychological factors. Close monitoring of the exchange rates is essential in order to protect the firm against adverse fluctuations. The monitoring task is rendered difficult by the complexities in the foreign exchange market. Foreign exchange market is the largest market in the world and it never closes as the trading moves with the sun around the world.

Currency risk management assumes a much more important role in the context of a developing country like India where the foreign exchange resources are scarce and are expected to be used judiciously. In order to promote growth and development, a large number of projects are being set up in high technology areas with foreign collaborations in line with the governmental policies. The initial outflow of foreign exchange required to set up such projects are generally justified on the basis of the future savings in
foreign exchange that would arise from import substitution and export earnings. This basis pre-supposes the timely implementation of the project at the budgeted cost. While the time and cost targets serve as guidelines for the implementation, achievement of the same in a majority of the cases may not be possible due to a variety of reasons. With delays in implementation, uncertainties also increase and so also the exchange risk. Currency exchange risk does not disappear with the implementation of the project but continues till the last instalment of repayment of the loan. Import of machinery, raw material etc., are affected by the fluctuations in the exchange rate of world currencies against the Indian Rupee.

Market risk and the technological obsolescence risk can be tackled through appropriate scientific surveys in the areas of market as well as technological development. These risks can either be avoided or tackled with skilful contingency planning. Political risk and related risks are unavoidable and the firm should use its discretion to tackle such situation as and when they arise. Financial risk is an avoidable risk. With proper financial planning an entity can minimize such risks if not altogether eliminate the same.

2.2.7 Risk factors specific to Indian context

A critical review of 150 prospectuses issued between April, '93 and August, '93, was made to study the perception of
risk factors by the respective managements. This included the prospectuses of 112 public issues, 33 rights issues and 5 public-cum-rights issues involving a subscription amount of Rs. 2,740 crores.

The study revealed as many as 950 statements of risks in these 160 issues ranging from as low as one statement of risk to as high as eleven statements of risk in an issue. The risks were classified into 10 major heads and 62 sub-heads. The major headings were

(a) Government policies;
(b) Government clearances;
(c) Project cost and means of finance;
(d) Raw materials;
(e) Marketing and product promotion;
(f) Foreign exchange fluctuations;
(g) Operational changes;
(h) Technology and quality;
(i) Legal, tax and accounting; and
(j) General.

It was found that out of the 52 sub-headings, the major concerns were with respect to the following:
## Table 2.1

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Concern % to the total (n = 150)</th>
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<tbody>
<tr>
<td>a. Government policies</td>
<td>67</td>
</tr>
<tr>
<td>b. Competition from established brands/new entrants/unorganised sector</td>
<td>57</td>
</tr>
<tr>
<td>c. Sanctions from State Electricity Boards</td>
<td>47</td>
</tr>
<tr>
<td>d. Clearance from Pollution Control Boards</td>
<td>41</td>
</tr>
<tr>
<td>e. Appraising institution not participating in the means of finance hence no monitoring of funds deployment</td>
<td>38</td>
</tr>
<tr>
<td>f. Foreign exchange fluctuations - impact on operations</td>
<td>32</td>
</tr>
</tbody>
</table>

It can be observed from the above that 32% of the risks are related to the impact of foreign exchange on operations. The purpose of this study is to focus attention on the foreign exchange component of a project and to understand the magnitude of the impact of fluctuations in foreign exchange rate on a project, its viability, and the techniques adopted by selected companies to meet this risk. We shall describe the various types of currency risks/exposures and techniques available to protect an entity against such risks in Chapter 3.
2.3 Tests of Viability

The ability of a project to survive is tested through various ratios, standards and parameters. In the case of marketing, these standards could be the market share, product mix and pricing policies. In the case of raw materials, it could be quality, minimum number of suppliers, price level etc. Ratio analysis throws some light on these parameters. However, an analyst has to be cautious before expressing an opinion because the conclusions are very much dependent on the quality and consistency of the data on which the ratios are calculated.

There are certain parameters that cannot be measured and are qualitative in nature. On these items, at best, an opinion only can be formed. It should be noted that here also, it is subject to bias and therefore depends on the experience and vision of the person assessing such factors. Usually, Financial Institutions consider all these factors during the appraisal as well as evaluation of a project. Appraisal is defined as an analysis of a proposed project to gauge its acceptability. Evaluation means a review of the progress of a project during or after implementation to determine whether it is being (or was) carried out according to plans and also an assessment of its developmental impact. The project appraisal is done by corporate and lending institutions to make an objective assessment of the various
aspects of the project in order to arrive at suitable financing decisions. This exercise enables the persons concerned to determine the viability of a project and also in some cases, to reshape the project to upgrade its viability 11.

In a recent study 12 on Examination of Risk Factors for financing a project by a development bank, sixteen variables have been identified for in-depth empirical verification. The variables that are considered to have a vital bearing on the viability of a project are -

(a) Location of the project;
(b) Size of the project;
(c) Promoter's contribution;
(d) Leverage (debt-equity mix);
(e) Source of technology;
(f) Nature of technology;
(g) Source of plant and machinery;
(h) Source of critical raw material;
(i) Market condition for raw materials;
(j) Market for finished goods;
(k) Level of competition;
(l) Promoter's type;
(m) Promoter's qualification;
(n) Experience in relevant business line;
(o) Experience in general business line; and
Experience in promoting similar projects.

It is opined by the author of the above study, that the scientific appraisal and the risk analysis will help the development banks to identify good projects.

2.3.1 Detailed Project Report (DPR)

In order to assess the feasibility and acceptability of a project, a detailed project report is prepared which consists of the project costs, means of finance and other relevant details on the following lines.

a. An overview of the project.

b. Promoters and Management -
   i. History and business of promoter including financial information;
   ii. Proposed management arrangements and list of key executives, indicating their experience;

c. Brief details of Technology and Knowhow suppliers and salient features of the contract with them;

d. Marketing Data;
   i. Demand for the product, location of sales such as domestic, exports, target market share and likely future competition and strategies to face the same.
   ii. Tariff protection and import restriction;
iii. Key factors that determine market potential;

d. Technical feasibility, manpower and raw material resources - 
i. Brief description of manufacturing process and special technical complexities, need for knowhow and special skills;

ii. Possible sources of equipment supply;

iii. Availability of manpower and of infrastructure facilities such as transport and communications, power, water etc;

iv. Sources, costs and quality of raw materials supply and relations with support industry;

v. Import restrictions on required raw materials;

vi. Proposed plant location in relation to suppliers, markets, infrastructure and manpower;

vii. Proposed plant size in comparison with other known plants.

e. Investment requirements, project financing and returns - 
i. Estimate of total project cost, categorised into land, buildings, plant and machinery and working capital indicating the rupee and foreign exchange components;

ii. Proposed financial structure of project, indicating expected sources and terms of equity and debt financing;
iii. Amount and type of financing required such as loan, equity or both;
iv. Information on profitability and return on investment;
v. Critical factors affecting profitability.

f. Government support and regulations -
i. Project in the context of the government's economic development programme;
ii. Specific governmental incentives and support available to the project;
iii. Expected contribution of the project to economic development;
iv. Outline of governmental regulations regarding exchange controls and conditions on capital entry and repatriation.

g. Schedule of implementation and commissioning of the project.

Thus, the appraisal of a project would encompass the various matters mentioned above to assess the genuineness, viability and also affordability. The assessment is to be done in a systematic manner based on the various guidelines and information available at the point of appraisal. The emphasis in our study will be on the various aspects of financial appraisal. There are a number of techniques
available to evaluate the risk involved in a project.

2.3.2 Important Ratios for testing Project Viability

According to a study conducted in 1986, the following project evaluation techniques were used by companies:

a. Internal Rate of Return (IRR) - as a %
b. Net Present Value (NPV) - should be positive
c. Discounted Payback (DPB) - years
d. Profitability Index (PI) - \(< = > 1\)
e. Payback Period (PB) - years
f. Accounting Rate of Return (ARR) - as a %

According to the above study, IRR was the most widely applied technique followed by NPV, PB and ARR respectively.

Another study conducted in 1991, on Financial Policies and Practices of Giant Companies in India, indicated the various techniques used by those companies as follows:

Table 2.2

<table>
<thead>
<tr>
<th>Evaluation Techniques used by Giant Companies in India</th>
<th>% of the responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Accounting Rate of Return</td>
<td>15.75</td>
</tr>
<tr>
<td>b. Pay Back</td>
<td>24.75</td>
</tr>
<tr>
<td>c. Net Present Value</td>
<td>27.75</td>
</tr>
<tr>
<td>d. Internal Rate of Return</td>
<td>25.75</td>
</tr>
<tr>
<td>e. Net Terminal Value</td>
<td>0.75</td>
</tr>
<tr>
<td>f. Others</td>
<td>5.25</td>
</tr>
<tr>
<td></td>
<td>100.00</td>
</tr>
</tbody>
</table>
In this study, NPV was found most useful followed by IRR, PB and ARR respectively.

In addition to the above, various other ratios such as (i) Debt-Equity Ratio, (ii) Debt Service Coverage Ratio (iii) Break-Even Point, and (iv) Earnings Per Share, are also worked out to assess the overall viability of the project. These ratios are derived from the statements submitted alongwith the detailed project report. The main financial statements containing future projections are -

(a) Projected balance sheet;
(b) Projected profit and loss account;
(c) Projected cashflow statements;
(d) Projected ratio analysis; and
(e) Assumptions made in the profitability/cashflow calculations.

The projections are normally prepared for a period of ten years. But the validity of these projections depends to a great extent on the assumptions made in various areas like marketing, technology, finance and political stability. The project is considered to be viable if the following conditions are reasonably satisfied:

a. There is a good marketing potential and an assured growth potential. There is no constraint on the availability of the key imported raw material;
b. There is no danger of technological obsolescence;
c. Promoters are truly committed and are capable of managing the project well;
d. There is no environmental threat;
e. There is some value addition to the economy; and also
f. There is financial feasibility indicated by,
   i. a good operating profit margins;
   ii. adequate cashflows to ensure the desired returns;
   iii. adequate cashflows to ensure the discharge of loan obligations and commitment to shareholders;
   iv. an attractive rate of return and a relatively low payback period;
   v. a low break-even point.

It may be appreciated that the conclusions drawn by the various analyses are very much dependent on the assumptions that are made in the calculations. Usually, in order to test the strength of the viability, a sensitivity analysis is carried out which will indicate the extent to which deviation in assumptions may affect the viability of the project. This part of the exercise is as essential as the basic calculations.

Sensitivity Analysis\(^{15}\) is the study of the impact that changes in cost and benefits would have on the profitability of present value of a project. For example, a 10 per cent increase in construction costs might reduce the internal
rate of return from 15 per cent to 9 per cent for project A, but from 15 per cent to only 12 per cent for project B. However, this analysis says nothing about the probability of deviations from the "best guess".

2.3.3 Projects and Currency Exchange Risk

In this work, it is desired to study the impact of variations in foreign currency exchange rates on the viability of the project. The currency exchange factors are normally treated as beyond the control of the management and are at best thought to be covered to a limited extent. The currency exchange rates can have impact on the corporate entity with foreign currency exposure either at the project stage or at the operational stage or both. Exchange rate impact arises during the project stage if the project contains a foreign exchange component in its cost elements such as plant and machinery, technical know-how and supervisory services etc. This foreign exchange component can be either funded completely in rupees or completely in foreign currency or partly in rupees and partly in foreign currency loans or equity. The impact of the fluctuations in the currency exchange rates depends very much on the funding pattern of the investment.

The fluctuations in the currency exchange rates will have an impact on the costs of the project until the payments
against the imported equipments are effected. The foreign currency exchange variations are added or deducted from the original cost of the project as per the current Generally Accepted Accounting Practices in India (GAAP). There are many instances where project costs have escalated due to currency exchange fluctuations. Continuously depreciating rupee behaviour has resulted in extra liabilities in terms of rupees for the discharge of the foreign currency component of the project cost. The impact of the currency fluctuations on the various ratios considered at the appraisal or evaluation stage varies depending upon the extent of exchange rate fluctuations and the import component in the project costs.

Sometimes, the imported items are tied up with foreign currency loans in a currency other than that of the country of origin. For example, a Deutsche Mark (DEM) import in India, can be funded through a Swiss Franc (CHF) Loan. In this case, the effect of fluctuations is a little more complex since three currencies are involved in making one payment viz., DEM, CHF and Indian Rupee (INR). In this case, for reckoning the project cost the parity would be against DEM and Rupees until the loan is availed. The parity would be against CHF and Rupee after the loan is availed. If the foreign currencies viz., DEM and CHF move in the same direction, there may be minimal impact on the
project costs. Depending on such movements, the indicators of viability will also change.

An entity is deemed to be exposed to the foreign exchange fluctuations in the operational stage if it has imports, or exports or both involving foreign currencies. In a depreciating rupee environment, a company solely dependent on the imports will be hurt the most unless it has the ability to pass on the increase in costs to its customers. However, under the same circumstances, an exporter would find his margins more and more attractive and he might use this benefit to effectively compete in the overseas market. Empirical estimation of pass-through in India shows that only 43 per cent of a depreciation in the exchange rate is passed on by exporters in the form of lower export prices in foreign currency, the rest being absorbed to raise exporters' profits in rupee terms.\(^6\)

In the case of corporate entities, where the funding of the project cost is through foreign currency loans, the currency exchange fluctuations will continue to have an impact not only during the project stage but also during the operational stage. The periodical interest payments and loan repayments in a depreciating local currency scenario can adversely affect the profitability and cashflows. The impact will be much more if the entity is dependent on imported inputs for its operations as explained above.
A review of the prospectuses of 150 companies issued between April 93 to August 93 has revealed that about 51% of the entities are affected by the foreign exchange fluctuations. A further analysis of this is as follows:

**Table 2.3**

Analysis of Foreign Exchange Risk by Stages of Project

(n = 150)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>No. of Companies</th>
<th>as a % to the 'n'</th>
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</thead>
<tbody>
<tr>
<td>a. Impact during Project Stage</td>
<td>20</td>
<td>13</td>
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<tr>
<td>b. Impact on Operations</td>
<td>48</td>
<td>32</td>
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<tr>
<td>c. Impact during both the stages</td>
<td>9</td>
<td>6</td>
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<td></td>
<td>77</td>
<td>51</td>
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2.3.4 While it is not possible to eliminate the impact of the currency exchange fluctuations, the corporate entities can choose a relevant hedging technique, so that the impact of such fluctuations are minimized. In the liberalised context, more opportunities are available to do the same. Our survey of the recent practices in currency exchange rate management in the corporate sector, discussed in detail in Chapter 5, indicates that the corporates require more flexibility, infrastructure and knowledge to tackle the impact of exchange rate fluctuations effectively.
2.4 The composition of Foreign Currency and Rupee Debts

There is no definite rule specifying the exact composition of the debts. However, there exists a general acceptance level for the composition of the debt and equity element in the means of financing of a project. While the text books suggest an ideal debt to equity ratio as one, many projects have been considered with a higher level of debt-equity, say, 1.5 to 2.0 which are reasonably comfortable. Carrying out projects beyond these levels though not inadmissible, calls for some cautious considerations.

The question of cost of capital also plays a vital role in the fixation of the composition of debt and equity. The amount a firm can borrow is usually decided by this leverage. In a developing country like India, the foreign currency loans hitherto availed have been more out of necessity than out of management decisions in the majority of the cases. The liberalised economy offers some flexibility such as access to international markets for obtaining equity capital or convertible bonds. Eventhough the funding of the foreign exchange component of the project with the foreign equity is not new in the Indian context, the liberalisation has given some leeway to the corporates to gain access to the international markets. Funding through foreign equity route will be attractive as long as rupee
loan lending rates are high. Several studies have been conducted in the past to show that equity is costlier than debt in the long run. India is in a transition period with its economic reforms and hence, the faith of the foreign investor on Indian paper will be fluctuating until a degree of sophistication nearly equal to the developed markets is achieved by the Indian market. Therefore, foreign currency debt will continue to play an important role in the means of financing of the project cost.

Now the question is, the extent up to which the foreign currency can be allowed in the means of financing of the project cost. As regards the composition of the debt viz., the extent to which this can contain local currency or foreign currency is dictated by any one or all or a combination of the following considerations:

a. the foreign exchange component of the asset being acquired.

b. the governmental regulations for availing such external borrowing.

c. Cost of such borrowings -

  i) among the various options available in foreign currency; and

  ii) between the foreign currency and the local currency.

The foreign currency loans are availed in India mainly to fund the cost of imported machinery and spares required for the project. The determination of the extent of the
borrowing in foreign currency and the mix of the currency would pose a challenge. To arrive at an ideal or near ideal solution is not an easy task. Due care has to be exercised by the Management in the selection of the foreign currency loan so that the cost of the borrowing can be optimised. Associated with this decision are the projections of import duty rates and the behaviour of the selected currency during the medium or long-term or till the liability is discharged. While the past behaviour is not a reliable guide to the future, some attempt can still be made by the management in projecting various alternatives for optimum funding pattern. Obviously, these tests have to be based on certain assumptions and forecasts which again are not easy tasks. Subject to the constraint of obtaining a reliable forecast, sensitivity tests can be done to determine the band in which the decision can hold good without much implication to the viability.

2.5 Conclusions

From the foregoing review of the evolution of projects, it is clear that there are three important phases in the setting up a project viz., evolution, implementation and operation. During each of these phases the project emerges successively from a degree of uncertainty to certainty. The style of management also needs to be flexible enough to accommodate and achieve the desired results in the various
phases.

Also from the foregoing, it is clear that the project passes continuously through various types of risk such as marketing, technological obsolescence, political etc. The analysis of the risk factors specific to Indian context clearly demonstrates that major risk factors encompassing the project are (a) Government policies; (b) Competition; (c) Sanctions from state electricity boards (d) Sanctions from pollution control boards, (e) Appraising institution not participating in the means of financing; and (f) Foreign exchange fluctuations.

Currency exchange rates also play an important role in the viability of the project. A number of factors are taken into account while establishing the viability of a project. The various studies indicate that Internal Rate of Return (IRR) and Pay Back Period (PBP) are the most important indicators of viability. However, in the Indian context, Debt-Equity ratio and Debt Service Coverage Ratio (DSCR) are also important indicators. The means of finance, composition of the debt, ratio of rupee and foreign currency debt, respective interest rates and exchange rates have also to be taken into account while considering the viability of the project.
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<th>Year</th>
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