

Notes for Project Appraisal (Session 1 to 10)

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Introduction – Projects Appraisal and Finance

What are some of the common elements in making of following?

- The Great Pyramid of Giza
- Taj Mahal
- Saradar Sarovar Dam, Gujarat
- Delhi Metro
- GIFT City, Gandhinagar
- Tata Neno Plant, Sanand, Gujarat
- Airbus A380
- Statue of Unity
- International Space Station
- A Software Package
- COVID 19 Vaccine

What is Project?

“Unique process consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost, quality and resources”

The term project has a wider meaning. A project is accomplished by performing a set of activities. For example, construction of a house is a project. The construction of a house consists of many activities like digging of foundation pits, construction of foundation, construction of walls, construction of roof, fixing of doors and windows, fixing of sanitary fitting, wiring etc. Another aspect of project is the non-routine nature of activities. Each project is unique in the sense that the activities of a project are unique and non-routine. A project consumes resources. The resources required for completing a project are men, material, money and time. Thus, we can define a project as an organized programme of pre-determined group of activities that are non-routine in nature and that must be completed using the available resources within the given time limit.

What is Project finance?

“A funding structure that relies on future cash flows from a specific development as the primary source of repayment with that development’s assets, rights, and interests legally held as collateral security”

What is project Appraisal?

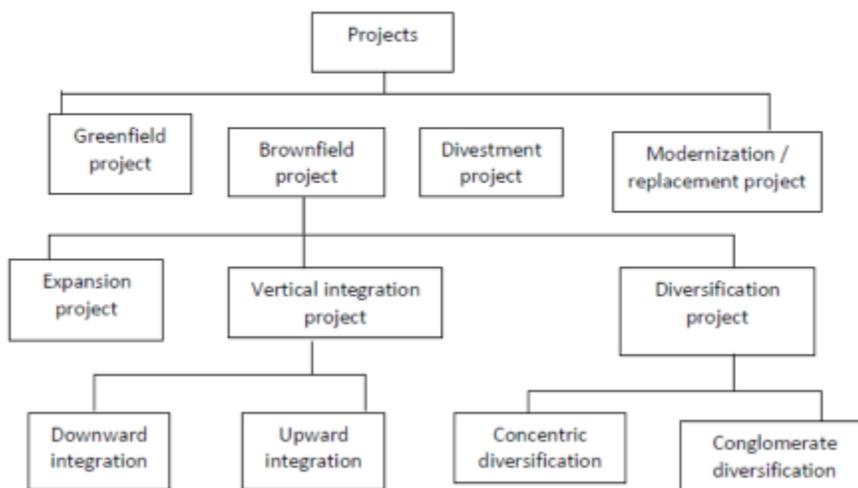
Project Appraisal is a consistent process of reviewing a given project and evaluating its content to approve or reject this project, through analyzing the problem or need to be addressed by the project, generating solution options for solving the problem, selecting the most feasible option, conducting a feasibility analysis of that option, creating the solution statement, and identifying all people and organizations concerned with or affected by the project and its expected outcomes. It is an attempt to justify the project through analysis, which is a way to determine project feasibility and cost-effectiveness.

Characteristics of project.

(1) Objectives : A project has a set of objectives or a mission. Once the objectives are achieved the project is treated as completed.

- (2) Life cycle : A project has a life cycle. The life cycle consists of five stages i.e. conception stage, definition stage, planning & organising stage, implementation stage and commissioning stage.
- (3) Uniqueness : Every project is unique and no two projects are similar. Setting up a cement plant and construction of a highway are two different projects having unique features.
- (4) Team Work : Project is a team work and it normally consists of diverse areas. There will be personnel specialized in their respective areas and co-ordination among the diverse areas calls for team work.
- (5) Complexity : A project is a complex set of activities relating to diverse areas.
- (6) Risk and uncertainty : Risk and uncertainty go hand in hand with project. A risk-free, it only means that the element is not apparently visible on the surface and it will be hidden underneath.
- (7) Customer specific nature : A project is always customer specific. It is the customer who decides upon the product to be produced or services to be offered and hence it is the responsibility of any organization to go for projects/services that are suited to customer needs.
- (8) Change : Changes occur through out the life span of a project as a natural outcome of many environmental factors. The changes may vary from minor changes, which may have very little impact on the project, to major changes which may have a big impact or even may change the very nature of the project.
- (9) Optimality : A project is always aimed at optimum utilization of resources for the overall development of the economy.
- (10) Sub-contracting : A high level of work in a project is done through contractors. The more the complexity of the project, the more will be the extent of contracting.
- (11) Unity in diversity : A project is a complex set of thousands of varieties. The varieties are in terms of technology, equipment and materials, machinery and people, work, culture and others.

Types of Project



Types of investment

- Physical, monetary and intangible assets
- Strategic investment and tactical investment
- Mandatory Investments
- Replacement investments
- Expansion investments
- Diversification investments
- R & D investments
- Miscellaneous investments

Project constraint and Iron Triangle.

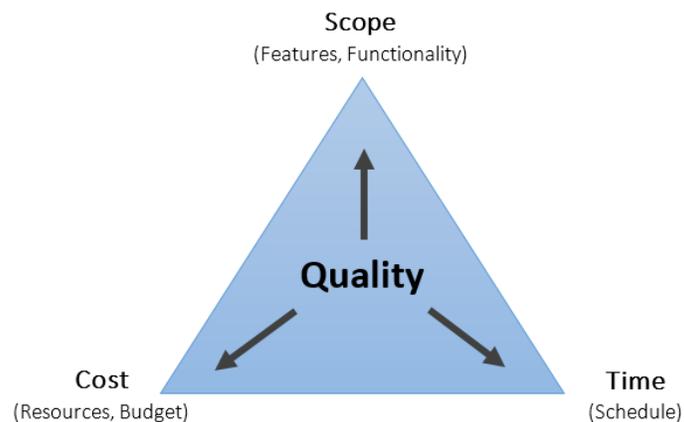
Scope: What work will be done as part of the project? What unique product, service, or result does the customer or sponsor expect from the project?

Time: How long should it take to complete the project? What is the project's schedule?

Cost: What should it cost to complete the project? What is the project's budget? What resources are needed?

Quality: How good does the quality of the products or services need to be? What do we need to do to satisfy the customer?

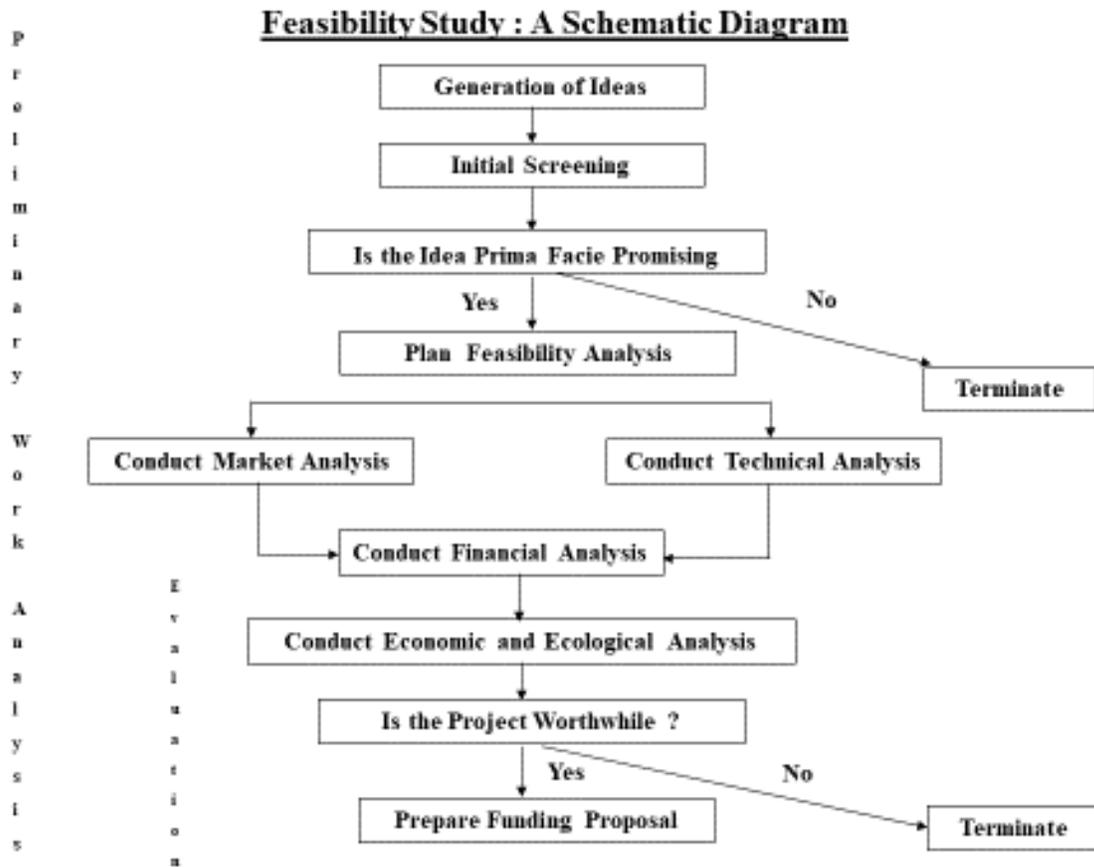
From PMBOK Guide.



Project Management – Knowledge Group and Process Group

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Time Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations 6.6 Develop Schedule		6.7 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Perform Quality Assurance	8.3 Control Quality	
9. Project Human Resource Management		9.1 Plan Human Resource Management	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Control Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Control Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	12.4 Close Procurements
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

Feasibility Study Diagram



The role which project feasibility studies play in the development of nations cannot be overemphasized. With repercussions on the social, economic, culture, and business sectors of society, a project feasibility study is an essential medium of progress both as a means to initiate profitable projects for sectoral enhancement and expansion and to evaluate actual project results.

As a consequence, feasibility studies pervade the entire life of projects, from the time the latter was conceived by a proponent as an idea to the time they are actually implemented and accomplished.

The project feasibility study is a thorough and systematic analysis of all factors that affect the possibility of success of proposed undertaking. The data, facts, and other findings presented in the study then become the basis for deciding whether the project is to be pursued, abandoned, or revised. The project feasibility study is really a synthesis of separate studies usually dealing with the market, technical, financial, socio-economic, and management aspects of the project.

While it is true that several undertakings in the past have become successful without the aid of a study, this cannot be used as a basis for the occasional belief that project feasibility studies are next to useless; nor is the failure of some carefully-studies projects a valid reason. The project feasibility study, in the first place, does not claim to be an antidote to failure. Its primary purpose is to enhance the probability of success of a specific undertaking. It is a result of the belief that a carefully planned activity has better

chances to succeed than an activity without a previous plan. And to those who argue that studies are worthless in these times of great uncertainty, let it be said that studies become even more important in evaluating multiple alternatives arising from multiple possibilities. The project feasibility study is one of the best instruments to meet the challenges of constant change.

GENERATION AND SCREENING OF PROJECT IDEAS

Project Selection Process

Identification of a new project is a complex problem. Project selection process starts with the generation of project ideas. In order to select the most promising project, the entrepreneur needs to generate a few ideas about the possible project one can undertake. The project ideas as a process of identification of a project begins with an analytical survey of the economy (also known as pre-investment surveys). The surveys and studies will give us ideas. The process of project selection consists of following stages

- Idea generation
 - SWOT analysis
 - Clear articulation of objectives
 - Fostering a conducive environment
- Corporate appraisal
 - Marketing and distribution
 - Production and operations
 - Research and development
 - Corporate resources and personnel
 - Finance and accounting
- Tools for Identifying Investment Opportunities
 - Porter model
 - Life cycle approach
 - Experience Curve
- Scouting for project ideas
 - Analyse the performance of existing industries
 - Examine the inputs and outputs of various industries
 - Review imports and exports
 - Study plan outlays and governmental guidelines
 - Look at the suggestions of financial institutions and development agencies
 - Investigate into local materials and resources
 - Analyse economic and social trends
 - Study new technological developments
 - Draw clues from consumption abroad
 - Explore the possibility of reviving sick units
 - Identify unfulfilled psychological needs
 - Attend trade fairs
 - Stimulate creativity for generating new product ideas
- Preliminary screening
 - Compatibility with the promoter
 - Consistency with governmental priorities
 - Availability of inputs
 - Adequacy of market

- Reasonableness of cost
 - Acceptability of risk level
- Project rating index
 - The steps involved in determining the project rating index are as follows:
 - Identify factors relevant for project rating
 - Assign weights to these factors (the weights are supposed to reflect their relative importance)
 - Rate the project proposal on various factors, using a suitable rating scale (Typically a 5-point scale or a 7-point scale is used for this purpose.)
 - For each factor, multiply the factor rating with the factor weight to get the factor score
 - Add all the factor scores to get the overall project rating index
- Sources of positive Net Present Value.
 - Economies of scale
 - Product differentiation
 - Cost advantage
 - Marketing reach
 - Technological edge
 - Government policy

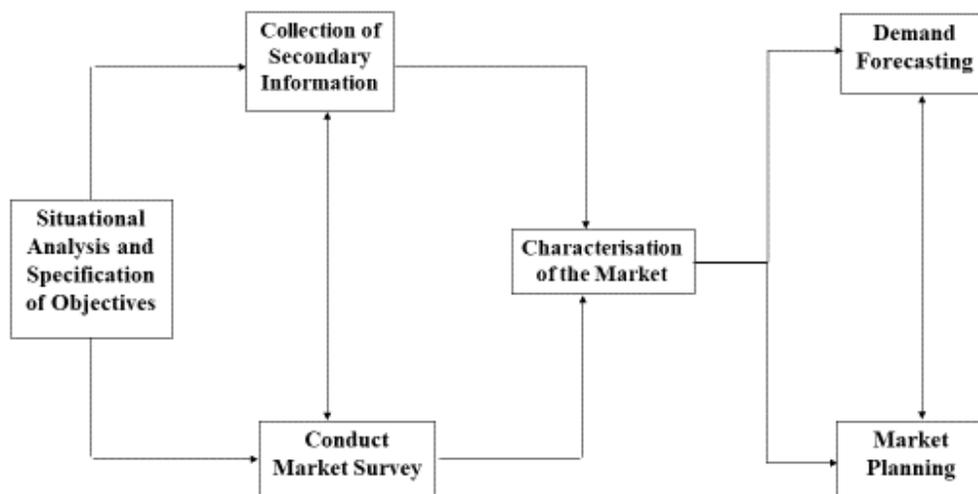
MARKET AND DEMAND ANALYSIS IDENTIFICATION OF TARGET MARKETS & PROJECTION OF DEMAND USING PRIMARY AND SECONDARY DATA

Concept of Market & Demand Analysis

The exercise of project appraisal often begins with an estimation of the size of the market. Before a detailed study of a project is undertaken, it is necessary to know, at least roughly, the size of the market because the viability of the project depends critically on whether the anticipated level of sales exceeds a certain volume. Many a project has been abandoned because preliminary appraisal revealed a market of inadequate size.

- Market and demand analysis is carried out to identify the aggregate demand for a product or service and the market share a project under consideration is expected deliver.
- Companies perform market demand analysis to comprehend how much consumer demand exists in the market for a product or service.
- This analysis helps management conclude if they can successfully enter a market and generate enough profits to grow their business operations.

Key Steps in Market & Demand Analysis, and their Inter-relationships



Situational analysis and specification of objectives

In order to get a “feel” of the relationship between the product and its market, the project analyst may informally talk to customers, competitors, middlemen, and others in the industry. Wherever possible, the

analyst may look at the experience of the company to learn about the preferences and purchasing power of customers, actions and strategies of competitors, and practices of the middlemen.

Collection of secondary information

The information required for demand and market analysis is usually obtained partly from secondary sources and partly through a market survey. In marketing research, a distinction is usually made between primary information and secondary information. Primary information refers to information which is collected for the first time to meet the specific purpose on hand; secondary information, in contrast, is information which is in existence and which has been gathered in some other context. Secondary information provides the base and the starting point for market and demand analysis. It indicates what is known and often provides leads and cues for further investigation.

Secondary information is information that has been gathered in some other context and is readily available. It provides the base and the starting point for the market and demand analysis. It indicates what is known and often provides leads and cues for gathering primary information required for further analysis.

While secondary information is available economically and readily (provided the market analyst is able to locate it), its reliability, accuracy, and relevance for the purpose under consideration must be carefully examined. The market analyst should seek to know:

- Who gathered the information? What was the objective?
- When was the information gathered? When was it published?
- How representative was the period for which the information was gathered?
- How representative was the period for which the information was gathered?
- Have the terms in the study been carefully and unambiguously defined?
- What was the target population?
- How was the sample chosen?
- How representative was the sample?
- How satisfactory was the process of information gathering?
- What was the degree of sampling bias and non-response bias in the information gathered?
- What was the degree of misrepresentation by respondents?

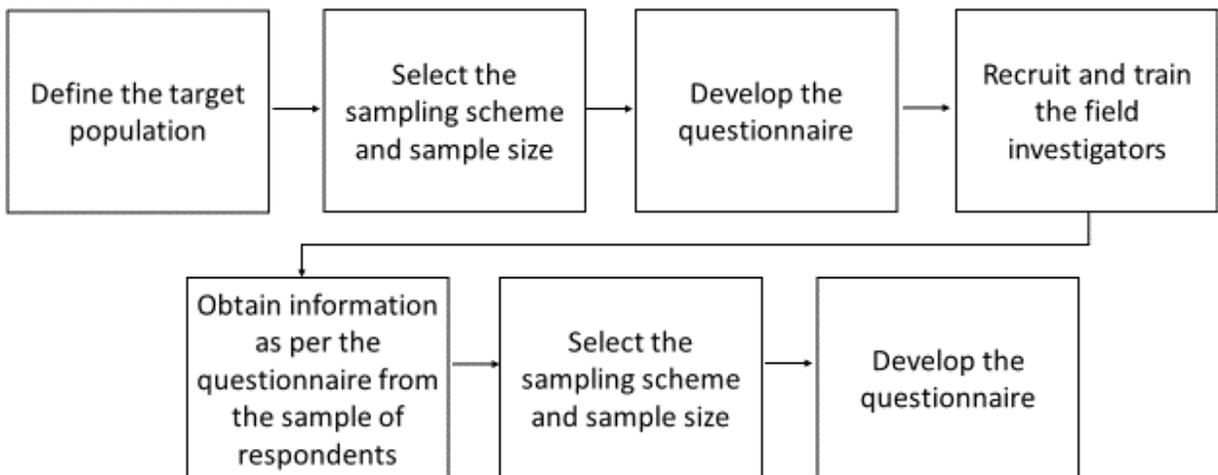
Conduct of market survey

Secondary information, though useful, often does not provide a comprehensive basis for market and demand analysis. It needs to be supplemented with primary information gathered through a market survey. The market survey may be a census survey or a sample survey; typically, it is the latter.

The information sought in a market survey may relate to one or more of the following:

- Total demand & rate of its growth
- Demand in different segments of the market
- Income & price elasticity of demand
- Motives for buying
- Purchasing plans & intentions
- Satisfaction with existing products
- Unsatisfied needs
- Attitudes toward various products
- Distributive trade practices & preferences
- Socio-economic characteristics of buyers

Steps in Sample Survey



Characterization of the market

Based on the information gathered from secondary sources and through the market survey, the market for the product/service may be described in terms of the following:

- Effective demand in the past & present
- Breakdown of demand

- Price
- Methods of distribution and sales promotion
- Consumers
- Supply and competition
- Government policy

Demand forecasting

After gathering information about various aspects of the market and demand from primary and secondary sources, an attempt may be made to estimate future demand. Several methods are available for demand forecasting

1. **Qualitative Methods:** These methods rely essentially on the judgment of experts to translate qualitative information into quantitative estimates. The important qualitative methods are :
 - Jury of executive method
 - Delphi method
2. **Time-Series Projection Methods:** These methods generate forecasts on the basis of an analysis of the historical time series. The important time series projection methods are:
 - Trend projection –method
 - Exponential smoothing method
 - Moving average method
3. **Causal Methods:** More analytical than the preceding methods, causal methods seek to develop forecasts on the basis of cause-effect relationships specified in an explicit, quantitative manner. The important causal methods are :
 - Chain ratio method
 - Consumption level method
 - End use method
 - Leading indicator method
 - Econometric method

1. Uncertainties in demand forecasting

Demand forecasts are subject to error and uncertainty which arise from three principal sources:

- Data about past and present market
- Methods of forecasting
- Environmental change

Remember no one has predicted COVID 19 and its impact on business.

Given the uncertainties in demand forecasting, adequate efforts, along the following lines, may be made to cope with uncertainties.

- Conduct analysis with data based on uniform and standard definitions.
- In identifying trends, coefficients, and relationships, ignore the abnormal or out-of-the-ordinary observations.
- Critically evaluate the assumptions of the forecasting methods and choose a method which is appropriate to the situation.
- Adjust the projections derived from quantitative analysis in the light of unquantifiable, but significant, influences.
- Monitor the environment imaginatively to identify important changes.
- Consider likely alternative scenarios and their impact on market and competition.
- Conduct sensitivity analysis to assess the impact on the size of demand for unfavourable and favourable variations of the determining factors from their most likely levels.

Market planning

A marketing plan usually has the following components

1. **Current marketing situation**

- Where is your organisation now?
- Who are your customer groups? What are their needs and requirements? How large and diverse are they?
- What kinds of products and services do you currently provide?
- How do you reach your customer groupings?
- Do you have any competition?
- What factor/s in your environment has an effect on your organisation?

2. **Opportunity and issue analysis** (S.W.O.T. analysis). This identifies key issues and opportunities for your organisation and it comprises an analysis of your internal operations
 - Strengths
 - Weaknesses

Also those external factors, which effect your organisation

- Opportunities
 - Threats
3. **Objectives.** Having identified the key issues affecting your organisation you can make some decisions about future objectives. These guide the development of strategies and action plans.
 - Objectives should meet certain criteria e.g. financial, and marketing which will be customer focused.
 - They should be clearly stated, measurable and listed in order of importance
 - They should be attainable and consistent with your organisation's culture.
 4. **Marketing strategy.** This is the game plan that needs to be implemented to achieve the objectives. It addresses the following:
 - Whom are you now targeting?
 - What do you want your position to be in terms of new product/service delivery?
 - Do you want to change your organisation profile and will you need to rebrand your organisation?
 - Will you change the way you promote and advertise yourself?
 - Will there be any changes in how you reach your customer groupings?
 - Any changes in staff?
 - Is there a need for more research?
 5. **Action program.** This describes:
 - What will be done
 - When will it be done?
 - Who will do it?
 - How much will it cost?
 6. **Budget and controls.**
 - The Budget is essentially a cash flow statement and profit/loss statement to support the marketing plan

- Control mechanisms and procedures should be established to monitor the progress of the plan to determine if anything needs changing. It would include a contingency plan in case something adverse should happen.

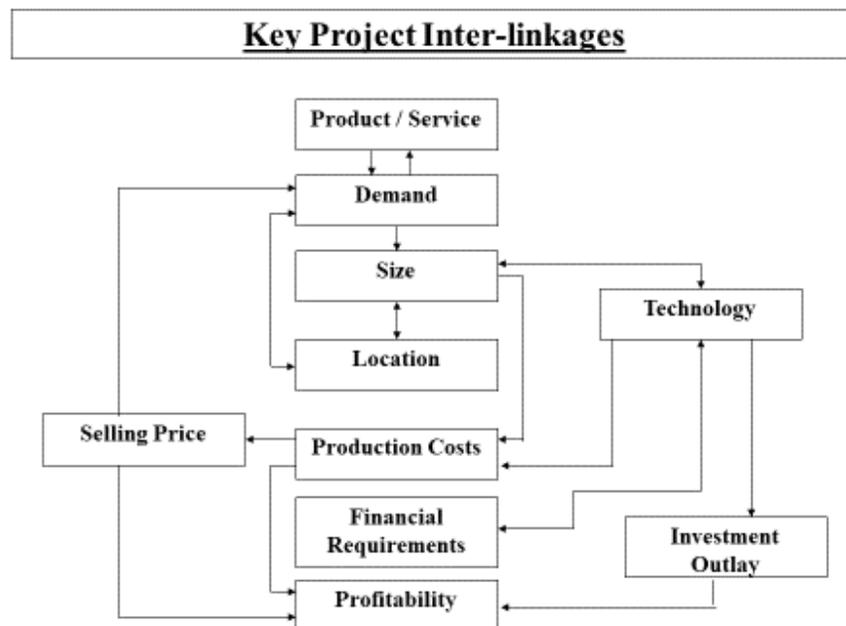
Summary

An estimation of the size of the market is the first step in project appraisal. In many cases, a project has been abandoned because preliminary appraisal revealed an inadequate size of market. The information required for market and demand analysis relate to effective demand in the past and present, breakdown of demand, price, consumers, methods of distribution and sales promotion, government policy and supply and competition. The information required for demand and market analysis is generally obtained partly from secondary sources and partly through a market survey. The important sources of national sample survey reports, plan reports, India year book, statistical abstract of the Indian Union. Sometimes, secondary information does not provide a comprehensive basis for demand and market analysis. It needs to be supplemented with primary information gathered through a market survey. After collecting information about various aspects of the market and demand from primary and secondary sources, it is essential to make an estimate of future demand. The various methods of demand forecasting include trend projection method, consumption level method, end use method, leading indicator method, econometric method. Given the uncertainties in demand forecasting adequate efforts are to be made to cope with uncertainties.

TECHNICAL ANALYSIS

The success of an enterprise depends upon the entrepreneur doing the right thing at the right time. Starting a new venture is a very challenging and rewarding task. A businessman has to take numerous decisions, right from the conception of a business idea, upon the start of production. Hence, the identification of the project to be undertaken, requires an analysis of the project in depth. Therefore, a technical and financial analysis of the project has to be undertaken.

- Scope of an investment project
 - Corporate objective and strategies
 - Marketing concepts and available inputs
- Design of the functional and physical layout
 - All activities to deliver inputs and outputs
 - Define corresponding investment expenditure
 - Cost during operational phase
 - Plant site



Analysis of technical and engineering aspects is done continually when a project is being examined and formulated. Other types of analyses are dependent and closely intertwined with technical analysis. Technical analysis is concerned primarily with:

Materials and inputs

An important aspect of technical appraisal is concerned with defining the materials and inputs required, specifying their properties in some detail, and setting up their supply programme. There is an intimate

relationship between the study of materials and inputs and other aspects of project formulation, particularly those concerned with location, technology, and equipment.

Materials and inputs may be classified into four broad categories:

- (i) raw materials,
 - (ii) processed industrial materials and components,
 - (iii) auxiliary materials and factory supplies, and
 - (iv) utilities.
-
- (i) Raw materials— Raw materials (processed and /or semiprocessed) may be classified into four types: (i) agricultural products, (ii) mineral products, (iii) livestock and forest products, and (iv) marine products.
 - (ii) Processed industrial materials and components— Processed industrial materials and components (base metals, semi-processed materials, manufactured parts, components, and sub-assembly represent an important input for a number of industries. In studying them the following questions need to be answered: In the case of industrial materials, what are their properties? What is the total requirement of the project? What quantity would be available from domestic source? What quantity would be available from foreign sources? How dependable are the supplies? What has been the past trend in prices? What is the likely future behaviour of prices?
 - (iii) Auxiliary materials and factory supplies— In addition to the basic raw materials and processed industrial materials and components, a manufacturing project requires various auxiliary materials and factory supplies, like chemicals, additives, packaging materials, paints, varnishes, oils, grease, cleaning materials, etc. The requirements of such auxiliary materials and supplies should be taken into account in the feasibility study.
 - (iv) Utilities— A broad assessment of utilizes (power, water, steam, fuel, etc.) may be made at the time of input study though a detailed assessment can be made only after formulating the project with respect to location, technology, and plant selection. Since the successful operation of a project critically depends on adequate availability of utilities the following points should be raised while conducting the input study: What quantities are required? What are the sources of supply? What would be the potential availability? What are the likely shortages/bottlenecks? What measures may be taken to augment supplies.

Production technology

For manufacturing a product/service often two or more alternative technologies are available. For example:

- Steel can be made either by the Bessemer process or the open hearth process.
- Cement can be made either by the dry process or the wet process.
- Soda can be made by the electrolysis method or the chemical method.
- Paper, using bagasse as the raw material, can be manufactured by the kraft process or the soda process or the simon cusi process.
- Vinyl chloride can be manufactured by using one of the following reactions: acetylene or hydrochloric acid or ethylene or chlorine.

Choice of technology

The choice of technology is influenced by a variety of considerations:

- Principal inputs— The choice of technology depends on the principal inputs available for the project. In some cases, the raw materials available influences the technology chosen. For example, the quality of limestones determines whether the wet or dry process should be used for a cement plant. It may be emphasized that a technology based on indigenous inputs may be preferable to one based on imported inputs because of uncertainties characterizing imports, particularly in a country like India.
- Investment outlay and production cost— The effect of alternative technologies of investment outlay and production cost over a period of time should be carefully assessed.
- Use by other units— The technology adopted must be proven by successful use by other units, preferably in India.
- Product mix— The technology chosen must be judged in terms of the total product-mix generated by it, including saleable byproducts.
- Latest developments— The technology adopted must be based on latest development in order to ensure that the likelihood of technological obsolescence in the near future, at least, is minimized.
- Ease of absorption— The ease with which a particular technology can be absorbed can influence the choice of technology. Sometimes a high-level technology may be beyond the absorptive capacity of a developing country which may lack trained personnel to handle that technology.

Product Mix

The choice of product mix is guided primarily by market requirements. In the production of most of the items variations in size and quality are aimed the production of most of the items, variations in size and quality are aimed at satisfying a broad range of customers. For example, production of shoes to different customers. It may be noted that sometimes slight variations in quality can enable a company to expand its market and enjoy higher profitability. For example, a toilet soap manufacturing unit may by minor variation in raw material, packaging, and sales promotion offer a high profit margin soap to consumers in upper-income brackets. While planning the production facilities of the firm, some flexibility with respect to the product mix must be sought. Such flexibility enables the firm to alter its product mix in response to changing market conditions and enhances the power of the firm to survive and grow under different situations. The degree of flexibility chosen may be based on a careful analysis of the additional investment requirements for different degrees of flexibility.

Plant capacity

Plant capacity (also referred to as production as capacity) refers to the volume or number of units that can be manufactured during a given period. Several factors have a bearing on the capacity decision.

- Feasible normal capacity (FNC) :- Capacity attainable under normal working condition
- Nominal maximum capacity (NMC) :- capacity which technically attainable guaranteed by plant supplier

Technological requirement— For many industrial projects, particularly in process type industries, there is a certain minimum economic size determined by the technological factor. For example, a cement plant should have a capacity of at least 300 tonnes per day in order to use the rotary kiln method; otherwise, it has to employ the vertical shaft method which is suitable for lower capacity.

Input constraints— In a developing country like India, there may be constraints on the availability of certain inputs. Power supply may be limited; basic raw materials may be scarce; foreign exchange available for imports may be inadequate. Constraints of these kinds should be borne in mind while choosing the plant capacity.

Investment cost— When serious input constraints do not obtain, the relationship between capacity and investment cost is an important consideration. Typically, the investment cost per unit of capacity decreases as the plant capacity increases.

Market conditions— The anticipated market for the product/service has an important bearing on plant capacity. If the market for the product is likely to be very strong, a plant of higher capacity is preferable. If the market is likely to be uncertain, it might be advantageous to start with a smaller capacity. If the market, starting from a small base, is expected to grow rapidly, the initial capacity may be higher than the initial level of demand- further additions to capacity may be affected with the growth of market.

Resources of the firm— The resources, both managerial and financial, available to a firm define a limit on its capacity decision. Obviously, a firm cannot choose a scale of operations beyond its financial resources and managerial capability.

Governmental policy— The capacity level may be constrained by governmental policy. Given the level of additional capacity to be created in an industry, within the licensing framework of the government the government may decide to distribute the additional capacity among several firms.

Location and site

The choice of location and site follows an assessment of demand, size, and input requirement. Though often used synonymously, the terms 'location' and 'site' should be distinguished. Location refers to a fairly broad area like a city, an industrial zone, or a coastal area; site refers to a specific piece of land where the project would be set up.

The choice of location is influenced by a variety of considerations:

- proximity to raw materials and markets
- availability of infrastructure
- labor situation
- governmental policies, and other factors.

Machinery and equipment

The requirement of machinery and equipment is dependent on production technology and plant capacity. It is also influenced by the type of project. For a process-oriented industry, like a petrochemical unit, machinery and equipment required should be such that the various stages have to be matched well. The choice of machinery and equipment for a manufacturing industry is somewhat wider as various machines can perform the same function with varying degrees of accuracy. For example, the

configuration of machines required for the manufacture of refrigerators could take various forms. To determine the kinds of machinery and equipment requirement for a manufacturing industry, the following procedure may be followed:

- (i) Estimate the likely levels of production over time.
- (ii) Define the various machining and other operations.
- (iii) Calculate the machine hours required for each type of operation.
- (iv) Select machinery and equipment required for each function.

The equipment required for the project may be classified into the following types:

- (i) plant (process) equipment,
- (ii) mechanical equipment,
- (iii) electrical equipment,
- (iv) instruments,
- (v) controls,
- (vi) internal transportation system, and
- (vii) other machinery and equipment.

In addition to the machinery and equipment, a list should be prepared of spare parts and tools required. This may be divided into:

- (i) spare parts and tools to be purchased with original equipment, and
- (ii) spare parts and tools required for operational wear and tear.

Constraints in selecting machinery and equipment— In selecting the machinery and equipment, certain constraints should be borne in mind:

- (i) there may be a limited availability of power to set up an electricity intensive plant like, for example, a large electric furnace;
- (ii) there may be difficulty in transporting a heavy equipment to a remote location;
- (iii) workers may not be able to operate, at least in the initial periods, certain sophisticated equipment such as numerically controlled machines;
- (iv) the import policy of the government may preclude the import of certain types of machinery and equipment.

FINANCIAL ANALYSIS

Financial analysis is defined as the process of discovering economic facts about an enterprise and/or a project on the basis of an interpretation of financial data. Financial analysis also seeks to look at the capital cost, operations cost and operating revenue. The analysis decisively establishes a relationship between the various factors of a project and helps in maneuvering the project's activities. It also serves as a common measure of value for obtaining a clear-cut understanding about the project from the financial point of view.

An analysis of several financial tools provide an important basis for valuing securities and appraising managerial programmes. Financial analysis is vital in the interpretation of financial statements. It can provide an insight into two important areas of management— return on investment and soundness of the company's financial position.

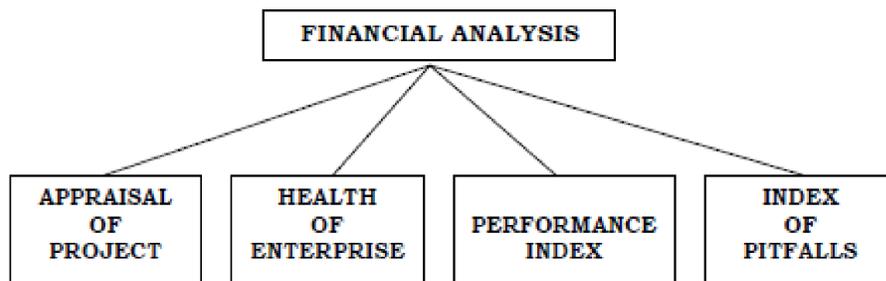
Internal management accounts provide information which is valuable for the purpose of control. The information is made available in the form of accounting data, which may be manifested as financial and accounting statements. A financial analysis reveals where the company stands with respect to profitability, liquidity, leverage and an efficient use of its assets. Financial reports provide the framework within which business planning takes place. They are the key through which an effective control of a business enterprise is exercised. It is the process of determining the significant financial characteristics of a firm. It may be external or internal. Creditors, stockholders and investment analysis perform the external analysis. The internal analysis is performed by various departments of a firm.

Significance of financial analysis

Financial analysis primarily deals with the interpretation of the data incorporated in the proforma financial statements of a project and the presentation of the data in a form in which it can be utilized for a comparative appraisal of the projects. It is, in effect, concerned with the development of the financial profile of the project. Its purpose is to find out whether the project is attractive enough to secure funds needed for its various constituent activities and once having secured the funds, whether the project will be able to generate enough economic values to achieve the objectives for which it is sought to be implemented. It deals not only with the financial aspects of a project but also with its operational aspects. As such, it is necessary to undertake such an analysis not only in the case of industrial projects but also in the case of non-industrial projects.

Analysis of financial statements has become very significant due to the widespread interest of various parties in the financial results of a company. In recent years, the ownership of capital of most public companies has become broad-based. A number of parties and bodies, including creditors, potential suppliers, debenture-holders, credit institutions like banks, industrial finance corporations, potential investors, employees, trade unions, important customers, economists, investment analysts, taxation

authorities and government have a stake in the financial results of a company. Various people look at the financial statements from various angles. A number of techniques have been developed to undertake analysis of financial statements in order to reach conclusions about the financial health, profitability and efficiency of an enterprise and to compare an enterprise with other similar undertakings. The technique of ratio analysis is the most important tool of financial analysis. It helps in comparing the performance of various companies and judge their financial soundness.



Utility of financial and accounting statements

Financial statements play a vital role in the internal financial control of an enterprise. These should, therefore, be properly constructed, analyzed and interpreted by executives, bankers, creditors and investors.

The entire future of a company hinges on the manager's ability to decide relevant financial data with a view to planning profitable moves. Learning to read financial statements is the first essential element in any businessperson's attempt to acquire financial management skills. The change in the elitism of stock ownership to broad public ownership has necessitated a concomitant change in the entire process of reporting corporate financial results. The role of management in the matter of preparation of financial statements is to add understanding to these statements, the fairness of which is to be viewed through the eye of the user, while that of the accountant is to close the communication gap and of the auditor to add credibility to them. For evolving a good economic information system, accounting innovations are of great economic importance. Without these, communication with the financial community would be difficult, the interest of present and future potential investors would not be served, the ability of the company to raise additional capital would be impaired and the government's regulatory measures and policies would not serve the best interest of society. Though a financial statement reveals less than it conceals, it provides the indicators of the enterprise's performance during the year.

Financial analysis seeks to spotlight the significant facts and relationships concerning managerial performance, viz., corporate efficiency, financial strengths and weaknesses and creditworthiness of the enterprise.

SUMMARY

Technical analysis is done continually when a project is being formulated. Technical analysis is concerned with materials and inputs, production technology, choice of technology, product mix, plant capacity, location, machinery and equipment, structure and civil works and project charts and layouts. Financial analysis seeks to look at the operating cost, operating revenue and capital cost. The purpose of financial analysis is to find out whether the project is attraction enough to secure funds needed for its various constituent activities and once having secured the funds, whether the project will be able to generate enough economic values to achieve the objectives for which it is sought to be implemented. The future of a company depends on the manager's ability to decide relevant financial data with a view to profitability planning. A financial statement reveals less than it conceals, it provides the indicators of the performance of the enterprise during the year.