

## Summary

### Chapter 3

#### TECHNICAL APPRAISAL

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##### Learning Objectives:

1. Provide conceptual understanding to Technical Appraisal
2. Inform the various aspects of Technical Appraisal
3. Get an introduction to Plant Flexibility and Flexible Manufacturing Systems
4. Know about Project Charts and Layouts
5. Assess Competitive Status of a Project/Unit
6. Learn a few Methods to Improve Quality and Productivity

##### Summary:

1. **Technical Appraisal** is the technical review to ascertain that the project is sound with respect to various parameters such as technology, plant capacity, raw material availability, location, manpower availability, etc
2. Technical appraisal is **important** as
  - (i) It ensures that the project is technically feasible - all the inputs required to set up the project are available
  - (ii) It facilitates the optimal project formulations in terms of capacity, technology, location, technology, size, etc on.
3. Usually, technical appraisal is carried out by independent agencies carrying out technical studies or by the institution by their in-house technical experts.
4. **Aspects of Technical Appraisal:**
  - (i) Manufacturing Process/Technology
  - (ii) Technical Arrangements
  - (iii) Material Inputs and Utilities
  - (iv) Product Mix
  - (v) Plant Capacity
  - (vi) Location and site
  - (vii) Machineries and Equipments
  - (viii) Structures and Civil Works
  - (ix) Environmental Aspects
5. **Manufacturing Process/Technology:** Often two or more alternative technologies available. The choice of technology is influenced by a variety

of considerations: plant capacity, principal units, investment outlay, production cost, use by other up product mix, latest developments, and ease of absorption.

6. **Technical Arrangements:** having a good technical collaborator or a good consultant is very important.
7. **Material Inputs and Utilities:** categorized into:
  - (i) raw materials
  - (ii) processed industrial material and components
  - (iii) auxiliary materials and factory supplies
  - (iv) utilities
8. **Product Mix:** it is important for the unit to have flexibility to alter its product mix to survive in changing market conditions.
9. **Plant Capacity:** number of units or volume that can be produced during a given period
10. **Location and site:** location should be close to sources of raw material or to the consumption markets. Power should be available – cost effective, cheap, uninterrupted. Water availability is also crucial. Accessibility by transportation is also important.
11. **Machineries and Equipments:** Smooth flow of production can be achieved if the various stages are matched well. External consultants must be employed for proper selection of machineries and equipments.
12. **Structures and Civil Works:** comprise of:
  - (i) site preparation & development
  - (ii) buildings and structures
  - (iii) outdoor works
13. **Environmental Aspects:** Polluting units should be set-up in approved industrial zones and where permission from Pollution Control Board is easily available. Effluent Treatment Plants (ETPs) should be available to neutralize the output waste.
14. **Flexibility** is desired of Plant & Manufacturing Systems to produce goods to cater to ever-demanding needs of consumers. At the same time, it should be sustainable for the unit.
15. **Interdependence of various parameters** is essential so that a one/few parameters do not throw the entire organization into potential losses / bankruptcy.

16. Estimates of the **Cost of Production** takes into account the costs such as raw materials, power & fuel, product R&D, administrative overheads, interest on borrowings, etc
17. The important **Project charts and Layout drawings** are :
- (i) general functional layout,
  - (ii) material flow diagrams,
  - (iii) production line diagram
  - (iv) transport layout,
  - (v) utility consumption layout,
  - (vi) communication layout
  - (vii) organizational layout, and
  - (viii) plant layout
18. **Competitive Status** of a project is assessed to ensure that the project is strong and can face competition. Eight performance measures are:
- (i) Manufacturing Lead Time (MLT)
  - (ii) Work-in-Process (WIP)
  - (iii) Throughput
  - (iv) Capacity
  - (v) Flexibility
  - (vi) Performability
  - (vii) Quality
19. Quality and Productivity can be improved by implementing **Expert Systems (ES)** and **Enterprise Resource Planning (ERP)**.
20. Implementation of the project may have time and cost over-run implications. **Review of the Project** is additional part of the Technical Appraisal.