CHAPTER 2

FEASIBILITY STUDY

THE PROJECT CYCLE

All projects go through a series of distinct stages, between the initial idea for the project and the time when the project is completed.

In general, the following stages can be identified in the project cycle.

1. **An identification stage - The needs, goals and purpose of the project are broadly identified.**
2. **The planning and preparation stage - During this stage alternatives for the project are analyzed. A project alternative is selected and a feasibility report for this project alternative is produced.**
3. **The appraisal or approval stage - The approval stage is the stage where decision-makers, including financiers, determine whether or not the project will be implemented.**

THE PROJECT CYCLE (continued)

4. **The implementation stage - In this stage detailed designs are completed and the project facilities are built and commissioned. Supporting activities such as staff training are also under way.**
5. **The operational stage - During the operational stage the project facilities are integrated with the existing system to reach the specified objective or goal.**
6. **The evaluation stage - During this final stage, the project is evaluated and the lessons learnt are identified so that future projects can be improved accordingly.**

DEFINITION OF FEASIBILITY

- **Feasible means ‘doable’, ‘achievable’, ‘realizable’, ‘accomplishable’.**
- **The purpose of a feasibility study is to make an assessment about the overall potential of a business concept of project.**
- **A feasibility study is a researched and written report on whether a business idea is achievable.**
- **In particular, a business feasibility study is used to assess the economic viability of your business concept before you start spending serious money and time.**
- **In other words, a feasibility study is a process to examine the potential of the business to be profitable in your specific market.**

DEFINITION OF FEASIBILITY (cont'd)

- **This is the study of a proposed project to indicate whether the proposal is attractive enough to justify more detailed preparation**
- **A feasibility study is part of the process of project identification, preparation and selection**
- **It involves the process of appraising projects and then choosing to implement some of them**
- **This is an extremely important stage in project management**

KEY FACTORS IN A FEASIBILITY STUDY

- **Key factors looked at in a feasibility study:**
  - **Availability of adequate market**
  - **Growth potential of the project**
  - **Investment, operation and distribution costs**
  - **Demand and supply factors**
  - **Social and environmental conditions**

OBJECTIVES OF FEASIBILITY STUDY

- **The feasibility study answers the basic question:**
  - ✓ **is it realistic to address the problem or the opportunity under consideration?**
- **And it produces a final proposal for the management, this final report might includes:**
  1. **Project name**
  2. **Problem or opportunity definition**
  3. **Project description**
  4. **Expected benefit**
  5. **Consequence of rejection**
  6. **Resource requirements**
  7. **Alternatives**
  8. **Other considerations**
  9. **Theorization**

FEASIBILITY STUDY

The project feasibility study consists of three analysis:

A. Market analysis

B. Technical analysis

C. Financial analysis

A. Market Analysis

Generally market analysis consists of:

1. **Gathering and collecting necessary information and data**
2. **Analyze the information and data**
3. **Find out what is the reaction of the market to the system (project)**
4. **Identify your market**
   - **Isolate your market**
   - **Describe the market**
   - **Quantify your market (to find out the demand)**
5. **Determine the magnitude of this market segment in future.**

A. Market Analysis (cont'd)

Briefly the purpose of market analysis is to collect information and data in order to identify, isolate, describe, and quantify your market on which your particular system (project) is going to be implemented.

These are discussed briefly in the following:

A. Market Analysis (cont'd)

1. Conducting consumer analysis:

a) What are their needs, motives, etc…

- Determine the level of the needs:

The basic level of needs are determined from the following:

- Physiological needs

- Social needs

- Psychological needs

A. Market Analysis (cont'd)

1. Conducting consumer analysis (cont'd) :

b) Purchasing process:

- **Decide who is going to buy**
- **How do they buy**
- **Where do they buy**
- **When do they buy**
- **In what quantity**

A. Market Analysis (cont'd)

2. Analyze the competitive environment

a) Competitors

- **Find out the competitors**
- **Find out their number**
- **Find out their financial capacity**
- **Find out their technological capacity**

A. Market Analysis (cont'd)

2. Analyze the competitive environment (cont'd)

b) Determine whether there is monopolistic (single) or oligopoly (served by a few), or perfect competition

c) Determine barriers to entry to the market

- **i) Economies of scale**
- **ii) Absolute cost advantage**
- **iii) Brand franchise etc.**

A. Market Analysis (cont'd)

Bases of competition:

There are three basic weapons in competition:

- **Price**
- **Quality :**

  Determine what kind of characteristic attracts to the place of market

- **Service:**

  Determine whether there is enough transport system to the place of consumers

A. Market Analysis (cont'd)

3. Develop criteria to segmentation of market:

If the market is very large, it is important to determine boundary to your market.

This is done from:

- **Geographic factors**
- **Demographic factors, age, sex, etc.**
- **Product end use (public sector or private sector)**
- **Economic factors (determine the income of the consumers)**

A. Market Analysis (cont'd)

4. Develop a marketing strategy:

a) **Determine the quality, kind, packaging of product depending upon the preference of the consumers.**

b) **Determine price of the product that is to say determine what kind of price strategy you should follow in order to compete.**

c) **Promotion: basic purpose of promotion is to make your consumers be aware of your product (advertisement)**

d) **Determine the place (distribution)**

A. Market Analysis (cont'd)

5. Determine the magnitude of market segment in future (i.e. forecasting market size, future demand)

Use the following techniques:

- **Casual model** (Casual Research explores the effect of one thing on another, and more specifically, the effect of one variable on another)
- **Regression analysis:** a statistical process for estimating the relationships among variables.
- **Time series analysis and so forth**

If we don't have any past data for instance if we are producing brand new product which does not exist in the market, use the following forecasting techniques:

- **Delphi** (a kind of brainstorming without face to face meeting)
- **Cross impact, etc.**(determine how relationships between events would impact resulting events and reduce uncertainty in the future)

A. Market Analysis (cont'd)

6. **Keep sales report which will indicate (reflect) your share of market in the future.**

B. Technical Analysis

The study of technical analysis includes:

1- Develop product design

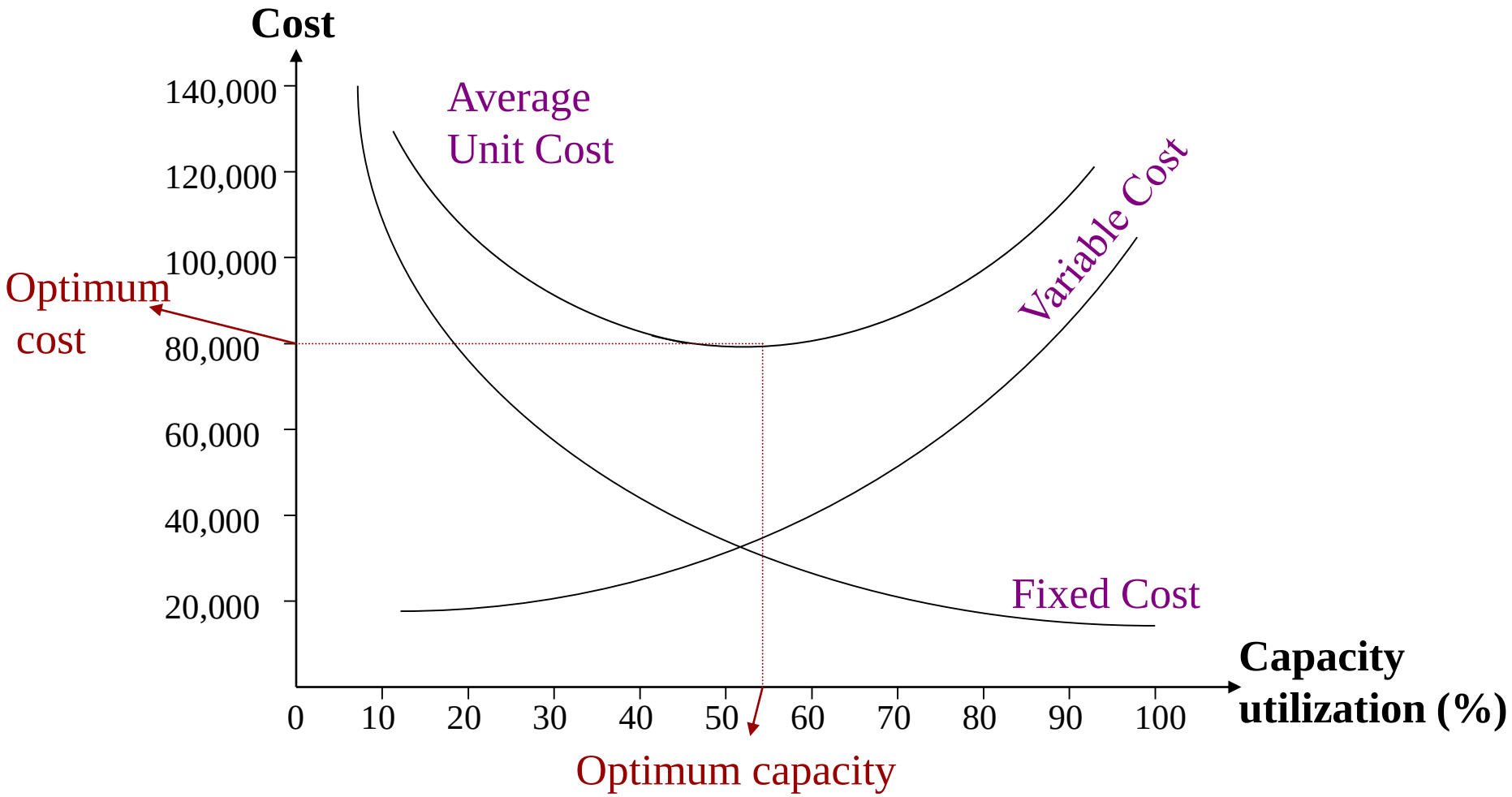
- **Market (sales) specification**
- **Performance specification**
- **Design specification**

B. Technical Analysis (cont'd)

2. **Evaluate alternative technology and select the optimal one based on:**
   - **Capital requirements**
   - **Energy requirements**
   - **Need for imported equipment and foreign exchange**
   - **Environmental effects**
   - **Safety and health hazards**
   - **Support of indigenous (native) industries**

B. Technical Analysis (cont'd)

3- Develop production



B. Technical Analysis (cont'd)

3. Develop production (cont'd)

a) When selecting alternative capacity level, take into account the following factors:

- **Demand**
- **Financing needs**
- **Technology capability on design aspect**
- **Raw materials**
- **Economic policy of the country**

B. Technical Analysis (cont'd)

3. Develop production (cont'd)

b) Determine production type:

- Continuous
- Intermittent or mixed

c) Determine production schedule:

- Demand fluctuation
- Inventory (stoking)

B. Technical Analysis (cont'd)

3. Develop production (cont'd)

d) **Select equipment, machinery, tools, etc.**

e) **Estimate the labor needs: direct labor, direct supervisory personnel, indirect supervisory personnel, service people, etc.**

f) **Lay out physical facilities**

g) **Design production of organization, estimate offices and science space requirements.**

B. Technical Analysis (cont'd)

4- Select plant location:

The factors considered in selecting plant location are:

a) Market place:

The location of the plant should be as near as possible to market place to save high cost of transportation, and fragility of the product.

b) Raw materials:

The location of the plant should be as close as possible to raw materials place in order to save the cost of transportation.

If the location of raw materials & market place is different location, how do we select?

B. Technical Analysis (cont'd)

This is done as follows:

i. **If the volume of the product is increased after process, place your plant near the market.**

ii. **If the volume of the product is decreased after process, place your plant near the raw materials.**

c) Availability of transportation facility

d) Availability of manpower

- **Abundance of wages**
- **Union militancy**

B. Technical Analysis (cont'd)

e) Social and cultural factors:

The firm has to meet the social and cultural factors such as:

- **Education facility**
- **Recreation facility, etc.**

f) Energy, water, sewage systems, etc.

g) Geographic factors:

Due to weather change, you may need to make heating or cooling system in your warehouse, etc.

h) National factors

i) Defense factors

B. Technical Analysis (cont'd)

5- Develop activity planning for implementation by using:

PERT: Project Evaluation Review Techniques

CPM: Critical Path Method

Barchart

C. Financial Analysis

Financial Analysis:

Financial analysis consists of three main parts:

a. Estimating of investment cost (first cost)

b. Estimating of operating cost

c. Estimating of revenue

C. Financial Analysis (cont'd)

6 - Financial Analysis (cont'd)

a. **Investment cost (first cost)** includes all expenditures related to the implementation of the project from its conception to start up that is called fixed cost.

Fixed capital cost:

These include costs of residential buildings, offices, cafeteria, warehouse, roads, energy lines, railroads, machinery, stand by equipment, etc…

C. Financial Analysis (cont'd)

6 - Financial Analysis (cont'd)

b. Operating cost includes cash to pay salaries, to cover emergency, insurance, cost of materials, energy, advertising, etc…

c. Revenue: A projection of annual net cash flow which is made with consideration of:

i. Sales of main and secondary products

ii. Services provided, etc.

C. Financial Analysis (cont'd)

Once the cost and revenue analysis are ready, then prepare Proforma Net Cash flow Statement as shown below:

		Year 1	Year 2	Year 3	…	Year n
Initial investment	(A)					
- Fixed cost		…	…	…	…	…
- Working capital		…	…	…	…	…
Interest payment	(B)	…	…	…	…	…
Depreciation	(C)	…	…	…	…	…
Operating costs	(D)	…	…	…	…	…
Revenues	(E)	…	…	…	…	…

C. Financial Analysis (cont'd)

After completing the Proforma Net Cash Flow Statement for each alternative, use the following project evaluation methodologies to select the most optimal project:

- **Net Present Value (NPV)**
- **Internal Rate of Return (IRR)**

To supplement the above alternative evaluation techniques use the following methods

- **Pay back period**
- **Break even analysis**

C. Financial Analysis (cont'd)

- **The payback period, n_p, for an asset or alternative is the estimated time, usually in years, it will take for the revenues and other economic benefits to recover the initial investment and a stated return.**
- **Break even analysis is the number of units need to be produced in order the project to break even.**
- **Payback period and breakeven analysis are not per se an alternative evaluation techniques, yet they are useful as a supplemental decision making tool.**

SECTIONS OF A FEASIBILITY REPORT

Every feasibility report should contain the following sections:

1. **an introduction**
2. **a body,**
3. **a conclusion, and**
4. **a recommendation.**

1. Introduction

- **The introduction should state the**
  - **purpose of the report,**
  - **describe the problems , and**
  - **include any pertinent background information.**
- **You may also discuss the scope or extent of the report in the introduction and any procedures or methods used in the analyses of alternatives.**
- **Any limitations on the study should be noted here as well.**

2. Body

- **The body of the report should present a detailed evaluation of all alternatives under consideration.**
- **Evaluate each alternative according to your established criteria.**
- **Ordinarily, each evaluation would comprise a separate section of the body of the report.**

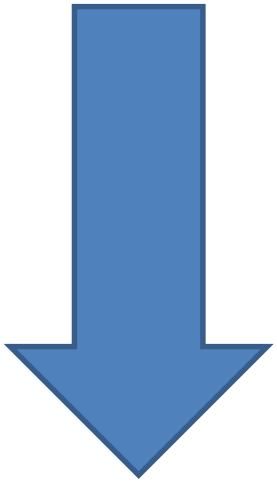
3. Conclusion

The conclusion should summarize the evaluation of all alternatives, usually in the order discussed in the body of the report.

4. Recommendation

This section presents the alternative that the best meets the criteria.

THANKS FOR YOUR ATTENTION



HOMEWORK - Feasibility study Assignment

XYZ Company is planning to build dormitory complex, facility building, sport facility and parking lot in a land of 30,000 m^2 area near EMU. The dormitories will be rented by EMU students. The project will be consisting of 540 bed rooms as follows:

<u>Boys' dormitories</u>
120 rooms single bed rooms (Bed room, small kitchen with sitting room and toilet and bath room).
150 rooms double bed rooms (Bed rooms, small kitchen with sitting room and toilet and bath room).

<u>Girls' dormitories</u>
120 rooms single bed rooms (Bed room, small kitchen with sitting room and toilet and bath room).
150 rooms double bed rooms (Bed rooms, small kitchen with sitting room and toilet and bath room).

Facility building consist of :

Shops	500 m^2
2 Restaurants	750 m^2 each
Stationeries	80 m^2
1 Post office	20 m^2
1 Gym center	500 m^2
1 Barber	60 m^2
1 Hairdresser	60 m^2

Sport Facility

Tennis court	30 m * 60 m
Basket ball court	30 m * 60 m
Valley ball court	10 m * 25 m

Cost of land will be 50 $/$m^2$, the building construction cost will be 550 $/$m^2$ and the sport facilities will be 150 $/$m^2$.
Assume all missing data.

Prepare a feasibility study report (carryout Market, technical and financial analysis) for XYZ Company. List all your assumptions. In preparing the feasibility report, you are advised to use the template attached.

Report will be due on 13 DECEMBER 2018.