Meaning of project appraisal:

It is a process of assessing, in a structured way, the case for proceeding with a project or proposal, or the project’s viability.

Process of Project Appraisal:

1. Initial assessment
2. Defining problem
3. Consulting and short-list
4. Developing options, and comparing and
5. Selecting project.

Methods of Project Appraisal:

1. Economic analysis
2. Financial analysis
3. Market analysis
4. Technical feasibility
5. Management competence

Net Present Value (NPV) is the present value of an investment’s expected cash flow minus the costs of acquiring the investment.

A real option itself, is the right – but not the obligation – to undertake certain business initiatives, such as deferring, abandoning, expanding, staging or contracting a capital investment project.

Types of options:

1. Options relating to project size
2. Options relating to project life and timing
3. Options relating to project operation

Steps in international project appraisal:

1. Identifying strategic factors
2. Determining the importance of factors
3. Determining strengths and weaknesses
4. Constructing strategic advantage profile of a firm
Investments appraisal has the following features:

1. Assessment of the level of expected returns earned for the level of expenditure made.
2. Estimates of future costs and benefits over the project’s life.

Return on capital employed

A project requires an initial investment of $800000 and then earns net cash inflows as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash inflows($000)</td>
<td>100</td>
<td>200</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>200</td>
<td>150</td>
</tr>
</tbody>
</table>

In addition, at the end of the seven-year project the assets initially purchased will be sold for $100000.

Average annual inflows = 1750000/7 = 250000

Average annual depreciation = (800000-100000)/7=100000

Average annual profit = 250000-100000 = 150000

\[ \text{ROCE} = \frac{\text{Average annual profit}}{\text{initial capital cost}} \times 100 \]

\[ = \frac{150000}{800000} \times 100 = 18.17\% \]

\[ \text{ROCE} = \frac{\text{Average annual profit}}{\text{average capital investment}} \times 100 \]

\[ = \frac{150000}{450000} \times 100 = 33.33\% \]

Net present value

Planning to buy a machine which would generate cash flow in USD as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flow in USD</td>
<td>(25000)</td>
<td>6000</td>
<td>8000</td>
<td>15000</td>
<td>8000</td>
</tr>
</tbody>
</table>

If discount rate is 10% is it worth to invest in machine?

Calculation of Net Present Value:

<table>
<thead>
<tr>
<th>Year</th>
<th>CFAT</th>
<th>D.F.</th>
<th>PVCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6000</td>
<td>0.0909</td>
<td>5454</td>
</tr>
<tr>
<td>2</td>
<td>8000</td>
<td>0.826</td>
<td>6608</td>
</tr>
<tr>
<td>3</td>
<td>15000</td>
<td>0.751</td>
<td>11265</td>
</tr>
<tr>
<td>4</td>
<td>8000</td>
<td>0.683</td>
<td>5464</td>
</tr>
<tr>
<td>Total inflow</td>
<td></td>
<td></td>
<td>28791</td>
</tr>
</tbody>
</table>

\[ \text{NPV} = \text{Total Inflow} – \text{Total outflow} \]

\[ = 28791 – 25000 \]

\[ = \text{USD 3791} \]

It is worth investing in the project since the NPV is positive.