Appraisal Methods

The appraisal methods enable an organization to evaluate objectively the cost of implementing a project (or investment) and the returns that could be earned from the project (or investment).

In this way, the appraisal methods help organizations to choose the most profitable and feasible project from a pool of numerous projects. Selection of right project is highly critical for the financial well-being of any organization. The organization has to make huge investment at the beginning in order to get good return over a long period of time. Poor appraisal of any project may lead under-investment (which results in underutilization of organization's resources leading to decline in market position) or over-investment (which causes excessive strain on organization's resources, expenses exceed the income).

Capital budgeting techniques are utilized by the entrepreneurs in deciding whether to invest in a particular asset or not. It has to be performed very carefully because a huge sum of money is invested in fixed assets such as machinery, plant etc. The analysis is based on 2 things viz first, the stream of expected cash flows generated by utilizing the assets and second, initial or future outlays expected for acquiring the asset.

Capital Budgeting Techniques / Methods

There are different methods adopted for capital budgeting. The traditional methods or non discount methods include: Payback period and Accounting rate of return method. The discounted cash flow method includes the NPV method, profitability index method and IRR.

1. Payback Period-

The **payback period (PBP)** is the amount of time that is expected before an investment will be returned in the form of income. When comparing two or more investments, business managers and investors will typically compare the projects to see which one has the shorter PBP. Projects with longer PBP are usually associated with higher risk.

For the purposes of this lesson, you will be a senior business manager for a large corporation and one of your responsibilities is to select from among the many potential projects that are proposed

by employees and lower-level managers. Although the size of your company is big, there is not enough money to fund all of the projects and the board of directors wants you to ensure that the organization does not invest in risky ventures.

Payback period = Cash outlay (investment) / Annual cash inflow

Even and Uneven Cash Flows-

Before beginning to analyze the two proposed projects brought to your office, you notice that one project has even cash flows and the other has uneven cash flows. There are two different methods that you will need to use to see which one is the best choice for your company.

- **Even cash flows** mean that the investment is expected to bring in income that is constant each year. The first investment is for a new machine that will produce one of your company's products more efficiently and will bring in the same income each month based on the organization's steady production of that item.

- **Uneven cash flows** occur when the annual cash flows are not the same amount each year. Under these circumstances, the formula that we used before will not work but being the wise business manager that you are; you still know how to figure out the PBP for this project.

The second investment is for a totally new product that can be made with most of the same machinery, but it will need some unique equipment and materials. Additionally, until the public is aware of the product's existence, there will not be a lot of demand for it. The first two columns of the table were provided by the business manager of that section.

2. Accounting Rate of Return -

The accounting rate of return (ARR) is the percentage rate of return expected on investment or asset as compared to the initial investment cost. ARR divides the average revenue from an asset by the company's initial investment to derive the ratio or return that can be expected over the lifetime of the asset or related project. ARR does not consider the time value of money or cash flows, which can be an integral part of maintaining a business.

ARR= Average income/Average Investment

ARR can be used when deciding on an investment or an acquisition. It factors in any possible annual expenses or depreciation expense that's associated with the project. Depreciation is an accounting process whereby the cost of a fixed asset is spread out, or expensed, annually during the useful life of the asset.

Depreciation is a helpful accounting convention that allows companies not to have to expense the entire cost of a large purchase in year one, thus allowing the company to earn a profit from the asset right away, even in its first year of service. In the ARR calculation, depreciation expense and any annual costs must be subtracted from annual revenue to yield the net annual profit.

3. Net Present Value (NPV)-

Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting and investment planning to analyze the profitability of a projected investment or project.

The present values of the cash inflow are compared to the original investment. If the difference between them is positive (+) then it is accepted or otherwise rejected. This method considers the time value of money and is consistent with the objective of maximizing profits for the owners. However, understanding the concept of cost of capital is not an easy task.

A positive net present value indicates that the projected earnings generated by a project or investment - in present dollars - exceed the anticipated costs, also in present dollars. It is assumed that an investment with a positive NPV will be profitable, and an investment with a negative NPV will result in a net loss. This concept is the basis for the Net Present Value Rule, which dictates that only investments with positive NPV values should be considered.

NPV = PVB – PV

Where,

PVB = Present value of benefits

PVC = Present value of Costs

4. Profitability Index-

The profitability index (PI), alternatively referred to as value investment ratio (VIR), or profit investment ratio (PIR), describes an index that represents the relationship between the costs and benefits of a proposed project, using the following ratio.

The PI is helpful in ranking various projects because it lets investors quantify the value created per each investment unit. A profitability index of 1.0 is logically the lowest acceptable measure on the index, as any value lower than that number would indicate that the project's present value (PV) is less than the initial investment. As the value of the profitability index increases, so does the financial attractiveness of the proposed project.

Understanding the Profitability Index

The profitability index is an appraisal technique applied to potential capital outlays. The method divides the projected capital inflow by the projected capital outflow to determine the profitability of a project. As indicated by the aforementioned formula, the profitability index uses the present value of future cash flows and the initial investment to represent the aforementioned variables.

When using the profitability index to compare the desirability of projects, it's essential to consider how the technique disregards project size. Therefore, projects with larger cash inflows may result in lower profitability index calculations because their profit margins are not as high.

The formula to calculate profitability index (PI) or benefit cost (BC) ratio is as follows.

PI = PV cash inflows/Initial cash outlay

5. Internal Rate of Return (IRR)-

The internal rate of return (IRR) is a metric used in capital budgeting to estimate the profitability of potential investments. The internal rate of return is a discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero. IRR calculations rely on the same formula as NPV does.

To calculate IRR using the formula, one would set NPV equal to zero and solve for the discount rate (r), which is the IRR. Because of the nature of the formula, however, IRR cannot be calculated analytically and must instead be calculated either through trial-and-error or using software programmed to calculate IRR.

Generally speaking, the higher a project's internal rate of return, the more desirable it is to undertake. IRR is uniform for investments of varying types and, as such, IRR can be used to rank multiple prospective projects on a relatively even basis. Assuming the costs of investment are equal among the various projects, the project with the highest IRR would probably be considered the best and be undertaken first.

IRR is sometimes referred to as "economic rate of return" or "discounted cash flow rate of return." The use of "internal" refers to the omission of external factors, such as the cost of capital or inflation, from the calculation.

If IRR > WACC then the project is profitable.

If IRR > k = accept

If IR < k = reject