Capital Budgeting and Investment Decisions

Capital budgeting is one of the critical area of finance management that involves decision making after analyzing concerned pros and cons for any investment related to the business, be it any sort of acquisition of assets (fixed assets) relevant to the operating activity of the business, tangible or intangible to seek long term benefits for the stakeholders and the business. So, in simple terms capital budgeting is nothing but managing the capital/finances to invest in profitable ventures.

TIME VALUE OF MONEY AND WEALTH MAXIMIZATION

Guided and driven by objective of wealth maximization of any business, there is one more crucial aspect or factor that is always considered, that is the time value of money. The key reasons that time value of money is always taken into account includes:

- **Inflation-** Changing buying or exchange power of money or the volatility in its value over time.
- Preference for current consumption over future consumption which might be uncertain.
- Leveraging the opportunity cost of alternative usage or investment of money.

The time value of money for any cash flow or investment is either explained through the future value of the investment or the present value of investment which can be single amount or an annuity. Four basic calculations involve:

1. PRESENT VALUE OF ANNUITY

$$P\left[\frac{1-(1+r)^{-n}}{r}\right]$$

$P = Periodic\ Payment$
$r = rate\ per\ period$
$n = number\ of\ periods$

2. FUTURE VAUE OF ANNUITY

$$FV\ of\ Annuity = P\left[\frac{(1+r)^n - 1}{r}\right]$$

$P = Periodic\ Payment$
$r = rate\ per\ period$
$n = number\ of\ periods$

3. PRESENT VALUE OF A PERPETUITY

$$PV\ of\ Perpetuity = \frac{D}{r}$$

$PV = Present\ Value$
$D = Dividend\ or\ Coupon\ per\ period$
$r = discount\ rate$

4. PRESENT VALUE OF GROWING PERPETUITY (i.e. continuous cash flows)

$$PV\ of\ Growing\ Perpetuity = \frac{D_1}{r - g}$$

$D = Dividend\ or\ Coupon\ at\ period\ 1$
$r = discount\ rate$
$g = growth\ rate$

Moreover, each of the cash flows scenario is associated with a cost of capital which can be either cost of debt or cost of equity based on the capital structure and discount rate decided by the firm.

CAPITAL BUDGETING DECISION AND ANALYZING CASH FLOWS

There can be various types of capital budgeting decisions like:

1. Expansion of facilities
2. Product development- new or improved products
3. Replacement decisions
4. Make or buy decisions etc.

Any of the above mentioned capital budgeting decision starts with estimating the cash flows which uses the concept of the time value of money wherein the present value of both the cash inflows and cash outflows is calculated for the concerned investment, the difference of which shows the net present value (NPV) for that investment. There are other methods or techniques for analyzing investment apart from the NPV method like IRR (Internal rate of return) and payback period.

1. **NPV method and profitability index (PI) method:** The cash flows for any investment project is forecasted on the basis of rational assumptions. The present value of the cash flows is then calculated using the cost of capital as the discounting rate after which the NPV is computed and decision on the project is taken based on the calculated NPV.

   This NPV has to be more than zero or positive for an investment to be considered favorable. This method considers the time value of money and is more relevant to the shareholder's value. But the issue with this method is that NPV is dependent on what is discount rate being used for computing the present values of the cash flows.

   On the other hand, PI is the ratio of the present value of the cash inflow to the cash outflow and has to be more than 1 to be considered for acceptance of the investment proposal.
2. **IRR method:** This method calculates the internal rate of return(IRR) for any investment to arrive at any decision. Internal rate of return is nothing but the rate at which present value of the cash inflows is equal to the present value of the cash outflows.

   And the project or the investment is accepted if it is found that the internal rate of return (IRR) is more than the cost of capital (raised to be used for investment).
3. **Payback method:** It is another method used as decision criteria for an investment and one of the conventional method for assessing any investment project. Payback method basically involves the determination of the number of years or the time taken to recover the initial cash outlay of an investment proposal.

Any investment proposal is accepted if the standard payback is more than the actual payback for the concerned investment. But, there limitations associated with this method as it does not address the cash inflows earned after the payback period and moreover, it fails to capture the magnitude of each cash flow which is crucial while comparing between two investment proposals.

Conflicting scenarios

There might be contradiction between two methods as to the result from one might contradict the decision based on the other. In most cases NPV method is the most preferred one as it takes into account the maximization of shareholder's value. But there are times where this sort of contradictory situations is generally dealt by adopting an incremental approach i.e. compute the incremental effect when analyzing between investment projects, how is the investments impacting profitability index.

Similarly, there are conflicting decision results with NPV and IRR when there are investment projects are such that: The project differs in terms of the pattern of the cash flows, the projects have different lives/tenure and differs in terms of the cash outlay.

RISK INVOLVED IN DECISIONS

There is always a risk associated with any sort of management decision with different magnitude, as the cash flows in investments are never certain, unless it is investment in Govt. ventures, bonds or securities. So, in order to address this uncertainty while making investment decision, there are two generally followed approaches one being discounting the uncertain cash flow with risk adjusted rate which is higher than risk-free rate (Govt. investments) and the second being discounting the cash flows which are certain and are calculated through certainty equivalent coefficient and which is discounted with risk free rate of return.

There are other risks as well like systematic risk and unsystematic risk which are generally taken into account in decision related to capital structure and financing.