# UNIT – 2: CAPITAL BUDGETING

## Capital Budgeting (Investment Decision)

Investment or capital budgeting decision or in other words the decision to invest in a project or not.

The universal rule for capital budgeting is to accept projects with positive Net Present Value (NPV)

## Net Present Value (NPV)

NPV is the difference between present value of all future cash flows from a project & the initial investment required.

[Present value is the current value of a future sum of money or stream of cash flows given a specified rate of return by which the future cash flows are discounted.

Discount rate is the rate of return used to discount future cash flows back to their present value.]

**NPV Formula:**

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \ldots + \frac{C_T}{(1+r)^T}$$

$-C_0 = Initial\ Investment$
$C = Cash\ Flow$
$r = Discount\ Rate$
$T = Time$

**Rules for NPV:**

- Accept Project when NPV>0
- Reject Project when NPV<0

In this context, it is important to know the concept of “Time Value of Money”.

## Time Value of Money

The time value of money is the concept that money one now is worth more than the identical sum in the future due to its potential earning capacity.

This core principle of finance holds that provided money can earn interest, any amount of money is worth more the sooner it is received.

For instance, if a bank offers a 3% rate of interest to the depositors.

Then, Rs 100 today will become Rs 103 after a year. If we deposit a sum of money with the present value in a bank that pays interest at the rate r, then after one year it will become

$PV (1 + r)$.

Let us call this amount its future value (FV).

We may write it as $FV = PV (1 + r)$

For 'n' years, it will be: $FV = PV (1 + r)^n$

Thus, $PV = FV/ (1 + r)^n$

**Future Value (FV)**

- Compounded annually – $PV(1 + r)^n$
- Compounded semi-annually – $PV(1 + r/2)^{n\times2}$
- Compounded quarterly – $PV(1 + r/4)^{n\times4}$
- Compounded monthly – $PV(1 + r/12)^{n\times12}$

**Present Value (PV)**

- Compounded annually – $FV / [(1 + r)^n]$
- Compounded semi-annually – $FV / [(1 + r/2)^{n\times2}]$
- Compounded quarterly – $FV / [(1 + r/4)^{n\times4}]$
- Compounded monthly – $FV / [(1 + r/12)^{n\times12}]$

Hence,

**Interest = FV – PV**

**Interest Factor (Discounting Factor) =** $1 / [(1 + r)^n]$