Payback

Investments and payback time

Payback time is widely used to determine the attractiveness of an investment. Payback time is the number of periods required for cumulative benefits to equal cumulative costs.

In general - the smaller the payback period, the better the investment.

Undiscounted Payback

Undiscounted payback can be expressed as

$$F_0 = F_1 + F_2 + \dots + F_{np}$$
(1)

or

$$F_0 - (F_1 + F_2 + \dots + F_{np}) = 0$$

where

 $F_0 = initial investment$

 F_1 .. = cash flows in future periods

np = period where initial investment equals accumulated future cash flows

Discounted Payback

Discounted payback can be expressed as

$$F_0 = F_1 / (1 + i) + F_2 / (1 + i)^2 + \dots + F_{np} / (1 + i)^{np}$$
(2)

or

$$F_0 - [F_1 / (1 + i) + F_2 / (1 + i)^2 + \dots + F_{np} / (1 + i)^{np}] = 0$$

where

i = interest rate

Source:

http://www.engineeringtoolbox.com/payback-time-d_1469.html