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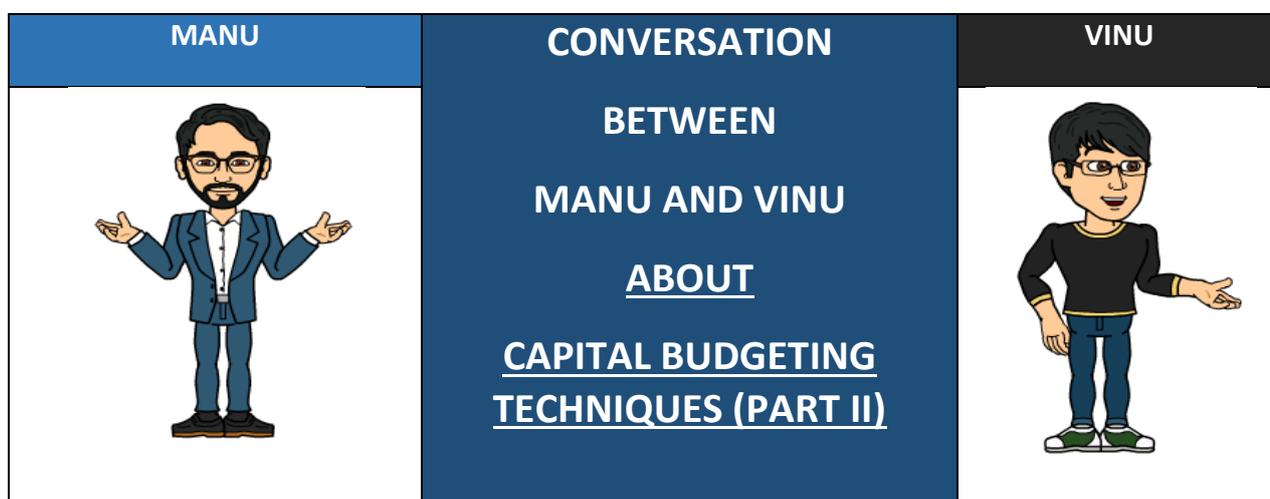
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Conversation on Capital Budgeting Techniques (Part II)

(This part covers Pay Back Period and touches on Time Value of Money)

Note: This is a second part of earlier article “Analysis on Capital Budgeting Techniques”. Start reading this Part II article only after reading the Part I article available in the following link:

<http://www.caclubindia.com/articles/analysis-on-capital-budgeting-techniques-23668.asp>



Section 6:

Manu explains Pay Back Period concept and also clears why mere cash flows are not sufficient for Investment Decision Making:

Manu	Now tell me, what do you infer from those 8 Years cash flows?								
Vinu	Manu!								
	The cash flows for 8 year								
	Particulars / Year	1	2	3	4	5	6	7	8
	Cash Inflows	38.75	42.25	45.05	49.25	52.75	56.25	60.45	64.65
	Aggregates to Rs.409.40 Crs whereas initial investment is only Rs.100 Crs.								

	Its hell a lot of money!
Manu	<p>May be Yes!</p> <p>But don't look at values grossly.</p> <p>You need to understand the nuance of Present value of Future cash flows.</p> <p>But before that, can you tell me how long this project takes to pay back or say recover the original investment of Rs.100 Crs.</p>
Vinu	<p>Hmmm....</p> <p>First Year - Rs.38.75 Crs</p> <p>Second Year – Rs.42.25 Crs</p> <p>Third year – Rs.45.05 Crs</p> <p>So cumulative cash flows up to year three Rs.126.05 Crs.</p>
Manu	<p>It means, between year 2 & 3 you are recovering entire Rs.100 Crs.</p> <p>Can you find out exact period?</p>
Vinu	<p>Recovery up to Year 2 is Rs.81 Crs [38.75 + 42.25]</p> <p>Amount to be recovered in Year 3 is Rs.19 Crs [100-81] for making up Rs.100 Crs.</p> <p>Whereas actual recovery in Year 3 is Rs.45.05 Crs.</p> <p>If Rs.45.05 Cr is earned in 12 months, then Rs.19 Crs can be earned in 5.06 months [19x 12/45.05]</p>
Manu	Exactly!

	By implementing this project, you can recover your investment of Rs.100 Crs in just 2 Years 5 months.
Vinu	Wow!
Manu	This is called Pay Back period of the project. This will play crucial role in Project Investments Decisions especially when you raise debts for shorter period.
Vinu	Correct! If debt have to be repaid in shorter period, then the projects Payback period should also be short.
Manu	Business entities would generally prefer projects with shorter payback period. If the payback is long, then risk associated with the projects is also more. Then return expectations from those projects will also be high.
Vinu	True Manu!
Manu	But this 'Payback period' alone as a tool to evaluate investment decision would become lopsided.
Vinu	Why?
Manu	If you are going to take a decision based only on the project which pays you back early, then you are ignoring the project which pays very well in the later years. You are ignoring the long term profitability of the business.
Vinu	Very True!
Manu	You are also ignoring the very important time value of money by placing reliance on payback period only.
Vinu	What is that Time Value of Money?
Manu	It is the fundamental concept in financial management. You cannot afford to be ignorant of that!
Vinu	Please Manu! Throw light on that!
Manu	The money which you get now is not equal to money which you will get in future.

Vinu	Little more please!
Manu	If I offer you Rs.1,000/- now and Rs.1,000/- a year after, which one would you prefer?
Vinu	Both are one and the same! Both are same Rs.1000. I don't find any different between the two!
Manu	No! There are differences!
Vinu	Difference?
Manu	If I give you Rs.1000/- now, you can either consume or invest. Which one would you prefer? Consume or Invest?
Vinu	It depends. If I have immediate requirement, I will consume. If not, I will Invest.
Manu	Let's say you invest in Deposit for 10% for one year.
Vinu	So after one year, I will have Rs.1000 + Rs.100 Interest.
Manu	Correct! Your present Rs.1000 is equal to Rs.1100 one year later. So, if I offer you either Rs.1000 now (or) One year after the same Rs.1000, you should automatically prefer now, because you can make it as Rs.1100. after one year by investing. Instead, if you are accepting my offer of Rs.1000 after one year, you are losing Rs.100.
Vinu	Very True! Future value of Rs.1000 now for one year is Rs.1100. So I should accept only if you offer Rs.1100 after one year.
Manu	You got that right. Future value of Rs.1000 now is Rs.1100.

	<p>Or I would say present value of Rs.1100 received after one year is Rs.1000.</p> <p>Does that make sense?</p>																								
Vinu	Yes very much!																								
Manu	<p>Ok! Before we get back to our example, let us do a small calculation.</p> <p>Let's say, you invest Rs.1000 and you get 10% interest every year on compounding, (meaning interest get accumulated) for a period of 5 years. In that case, what will be the future value of the investment?</p> <p>Please work out its computation.</p>																								
Vinu	<p>Ok!</p> <table border="1" data-bbox="277 853 1163 1335"> <thead> <tr> <th>Year</th> <th>Principal</th> <th>Interest @ 10%</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1000</td> <td>100</td> <td>1100</td> </tr> <tr> <td>2</td> <td>1100</td> <td>110</td> <td>1210</td> </tr> <tr> <td>3</td> <td>1210</td> <td>121</td> <td>1331</td> </tr> <tr> <td>4</td> <td>1331</td> <td>133</td> <td>1464</td> </tr> <tr> <td>5</td> <td>1464</td> <td>146</td> <td>1610</td> </tr> </tbody> </table> <p>Is it correct?</p>	Year	Principal	Interest @ 10%	Total	1	1000	100	1100	2	1100	110	1210	3	1210	121	1331	4	1331	133	1464	5	1464	146	1610
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Manu	<p>Ya!</p> <p>This table shows,</p> <p>-if you invest Rs.1000 in the beginning of the year, its future value at end of year 1 is Rs.1100/-.</p> <p>It means, if you are getting Rs.1100 at end of year 1, it is possible only if you invest Rs.1000 now!</p> <p>If you are getting Rs.1210 at the end of year 2, it is possible only if you invest Rs.1000/- now!</p>																								

	Similarly, if you are getting Rs.1610/- at the end of year 5, it is possible only if you invest Rs.1000/-
Vinu	True!
Manu	So, we can say, the present value of Rs.1610/- to be received at the end of 5 years is Rs.1000/-
Vinu	Yes!
Manu	So this tells you, don't get carried away by big numbers which you are going to get in future. You have to find its present value to take some meaning full decision.
Vinu	But Manu, still I am not clear. How it is going to help investment decision by finding the Present Value of Future Cash Flows?
Manu	It would help you Vinu! Let's continue with our present case itself. Rs.1000 has been invested @ 10% for 5 years, right?
Vinu	Yes!
Manu	So by now you know, this Rs.1000 will become Rs.1610/- at the end of 5 Years.
Vinu	Yes!
Manu	So, if this Rs.1000/- becomes Rs.1610/- in 5 years, it means it means it has earned 10% every year without fail. Am I right?
Vinu	Yes!
Manu	And, only if it earns Rs.1610/- its present value would be equivalent to Rs.1000/- Is that correct?
Vinu	Yes! Very much!

Manu	<p>What would be present value if amount received at the end of 5 years is Rs.1200/- instead of Rs.1610/- ?</p> <p>Will it be equivalent to Rs.1000/-</p>
Vinu	<p>No! Because we know, @ 10% interest rate, present value of Rs.1610/- received after 5 years can be Rs.1000/- only. So it cannot be equivalent to Rs.1,000/- it should be obviously less than Rs.1,000/-</p>
Manu	<p>Yes! That's the point!</p> <p>Now this information would help you to take decision.</p>
Vinu	<p>How?</p>
Manu	<p>Let's see.</p> <p>You are investing Rs.1000 @ 10% for 5 years.</p> <p>You have two options.</p> <p>Option 1 will give Rs.1610 at the end of 5 years.</p> <p>Option 2 will give Rs.1200 at the end of 5 years</p> <p>Which option you will select?</p>
Vinu	<p>Obviously option 1.</p>
Manu	<p>Yes! You should because, the present value of Rs.1610 is Rs.1000.</p> <p>In that case, it is equivalent to you give Rs.1000 and take back Rs.1000 now.</p> <p>But in option 2, the present value of Rs.1200 would be less than Rs.1000. It means, you are investing Rs.1000 now and taking back less than Rs.1000/- simultaneously.</p> <p>So you should not think of option 2.</p>
Vinu	<p>True!</p>
Manu	<p>I'll also give you third option.</p>

	<p>Option 3 – You will get Rs.1800/- at the end of year 5.</p> <p>Which option you will prefer?</p>
Vinu	<p>Now I would prefer option 3 because present value Rs.1800/- received at the end of 5 years would be more than Rs.1,000/-</p> <p>It would mean, I invest Rs.1000 now and take back more than Rs.1000 simultaneously.</p>
Manu	<p>Yes! You got the crux of it.</p> <p>Any investment proposal should be viewed from this angle.</p> <p>You should find present value (PV) of future cash flows from project. If the PV of future cash flows are equal to Initial investment or Total Investment, then the investment is earning expected returns.</p> <p>If PV of future cash flows are greater than the Initial investment or Total Investment, it earns expected + extra. i.e., it earns more than your expected returns.</p>
Vinu	<p>And if PV of future cash flows are less than the Initial investment or Total Investment, it earns less than our expectation.</p>
Manu	<p>Hit on the Nail! To put it with some numbers, if you are expecting 10% returns and the project is going to earn 5%, you should be avoiding those projects.</p>
Vinu	<p>Now I understand the Time value concept Manu! Let us proceed back with our example.</p>

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