Handy Methods for Financially analysing Higher Education Decisions

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Introduction

The higher education of students have become costlier, and reputed Universities Fees for Graduation and especially Post Graduation Education are as high as Rs. 5,00,000/- plus for each academic year. Hence the student needs handy techniques to take decisions about the financing of his / her education. The current Gen X doesn't want to depend on their parents for bearing their education costs even though the parents may be capable of financing it.

Hence this paper analyses some handy methods for taking financial decision. This methods can be used by even non finance background person, to take decision about whether his / her decision is financially viable.

Literature Review

Any research paper will start with the study of th e existing research material because that will be the base of current research. Taking the base of the existing research material, i.e. by conducting Literature Review, the research gap will be identified and then the current research will be started in that direction. Similarly in my research also, an Extensive Literature Review was undertaken with a view to build the base of research and also to find the research gap.

Research Papers

Paper :"Some New Views On The Payback Period and Capital Budgeting Decisions"

Author : H. Martin Weingartner

The author states that though many Academic Writers condemn the use of Payback Period Method, the Payback Period Method is one of the most widely applied quantitative concept while taking long term decisions. This paper tries to put light on long term investment problem by carefully analysing the Payback Period concept.

The author refers to writer Gordon (Gordon, 1955), who states that if the streams of Cash Inflows are uniform, the reciprocal of Payback Period Method is the discounted cash flow rate of return for any project with finite life or it is a good approximation of this rate for a long life project. The author states that only those projects should be accepted whose Payback is less than some specified period of time.

The discounting rates or the rates which are applied to the activity's Cash Flows are market determined.

The author states that those project which have lesser payback period are referred to as LIQUID projects. In the paper by Byrne (Byrne, 1967) he states that Cost of Capital as a means to measure cost of foregone opportunities is not well defined in this model.

The Research Gap in this paper is that it has studied the impact of Payback Period Method while taking decisions for acquiring Fixed Assets required for manufacturing business or any such other businesses. But there is no such study as yet to analyse the Financial Decisions regarding education of students and it's Financial feasibility, which is put forth in our current paper.

Paper :"The role Payback Period in Theory and Application of Duration To Capital Budgeting : A Comment"

Author : Lutz Krusghwitz

Boardman, Reinhart and Celec (Boardman, 1985) pointed out that under certain conditions the payback period method may be used as a proxy for duration. This new way of thinking will increase the popularity and importance of Payback Period Method, and silence it's critics.

The assumptions made by them are :

    a. Annual Returns of the project are equal over time

    b. The project has a finite life

    c. The internal rate of return is used as discounting factor

Major Findings

Planning for pursuing higher education (Graduation and Post Graduation in Reputed Universities) is a decision which has life changing consequences. It is a long term decision, because even though the education may last for 2 to 5 Years, then the repayment of the Education Loan starts, after some Grace Period awarded to the students.

Hence it is essential to take the help of Time Value of money and Techniques of Capital Budgeting to take the Financing Decisions.

Further due to inflation in the economy the value of money is continuously decreasing. Inflation means a rise in the prices of goods and services.

Due to price rise, say after 1 year for same QUANTITY of GOODS / SERVICES more MONEY will be required or for same MONEY lesser QUANTITY of GOODS / SERVICES will be bought. This is called TIME VALUE of MONEY.

While taking the decisions whether it is financially feasible to pursue Higher Education, the following are the important points :

a.   We consider the Time Value of Money because these decisions have financial implications for next 4 to 5 years. So value of money will change in the future due to inflation.

b.   Decisions are irreversible as we cannot back out later or backing out later may involve substantial financial and academic loss.

c.   We consider the education financially feasible depending upon how early CASH paid for the education is recovered back.

d.   The placements are dependent upon not only the education imparted, but also personal traits of the students.

e.   Even though Education is invaluable, we are trying to financially analyze the education proposals to study it's financially feasibility.

The role of Capital Budgeting :

Capital :Non Recuring decisions about investing the money in education.

Budgeting : Planning / Forecasting for the future.

Capital Budgeting : Planning for the financial feasibility of the educational courses i.e. whether it will be financially advantageous to pursue the proposed education.

The relation between Time Value of Money and Capital Budgeting is that, to take Capital Budgeting Decisions, we have to use the Time Value of Money.

Time Value of money, there are 2 concepts :

a. Future Value of Money

b. Present Value of Money

Future Value of Money : The value of money in the future.

For Eg. : Rs. 100/- today invested at 10% for 1 Year.

Future Value = 100 + 10% = 110/-

Future Value = Present Value $(1 + r)^n$

$FV = PV (1+r)^n$

Where,

FV = Future Value
PV = Present Value
r = rate of interest
n = number of years
$F V = 100 (1+0.10)^1$
$FV = 100(1.10) = 110/\text{-}$

Future Value after 2 Years :

$100 + 10\% + 10\% = 110 + 10\% = 121/\text{-}$

$F V = 100 (1+0.10)^2$

$FV = 100(1.21) = 121/\text{-}$

Future Value after 3 Years :

$100 + 10\% + 10\% + 10\% = 110 + 10\% + 10\% = 121 + 10\% = 133.10/\text{-}$

$F V = 100 (1+0.10)^3$

$FV = 100(1.331) = 133.10/\text{-}$

Present Value of Money : The value of some money in the future, is how much TODAY.

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

The rate of interest is 10%.

I want Rs. 100/- after 1 Year. So, How much I need to invest TODAY. This is called as PV.

TODAY	After 1 Year
1	1.10
?	100

$100 \times \dfrac{1}{1.10}$

$= 100 \times 0.909$

$= 90.90/\text{-}$

I want Rs. 100/- after 2 Years. So, How much I need to invest TODAY. This is called as PV.

TODAY	After 2 Years
1	1.21
?	100

$$100 \times \frac{1}{1.21}$$

$= 100 \times 0.826$

$= 82.60/-$

Mathematical Formulas for Time Value of Money :

$$FV = PV (1+r)^n$$

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

The following are some of the techniques for analysing the decisions financially :

a. **Payback Period Method :-**

i. Meaning :-This is one of the simplest method of evaluations. It is the time required for recovering the entire education cost. It is the period within which the total Cash Inflows from the incremental earnings after the education equals the cost of the education project.

ii. Steps for calculation :-

		Rs.
1. Cash Inflows =	Incremental Income after education	xxx
Less :	Educational Loan instalments	xxx
	Surplus Before Tax	*xxx*
	Less : Tax @ _____%	xx
	Surplus After Tax / **Cash Inflow from Project**	xxx

2. Payback Period $= \dfrac{Initial\ Cash\ Outflow}{Annual\ Cash\ Inflow}$ years

iii. Decision Criteria :- The educational option with a lower Payback Period will be preferred. This is because if the investment is recovered earlier the better it is. In some cases the student decides some maximum Payback Period for the acceptance of the education proposals. Then this criteria will have to be fullfilled by the proposal if it should be accepted.

iv. Example(s) :-

a. Project having equal Cash Inflows every year :

Year	Cash Flows (Rs.)
0	(10,00,000)
Annual Cash Inflow	2,00,000

Hence Payback Period $= \dfrac{Rs.\ 10,00,000}{2,00,000} = 5$ Years.

b.   When Projects have uneven Cash Flows each year :

A project requires an initial investment of Rs. 10,00,000 /-. The annual Surpluses are expected to be Rs. 3,25,000 for the first year, Rs. 3,50,000 for the second year, Rs.4,50,000 in the third year and Rs. 5,10,000 in the fourth year after paying the education loan instalment. The Tax Rate applicable is 30 %. Find Payback Period.

Solution :

1.   Calculation of Cash Inflows :

	Year 1	Year 2	Year 3	Year 4
Surplus Before Tax	3,25,000	3,50,000	4,50,000	5,10,000
Less : Tax @ 30 %	97,500	1,05,000	1,35,000	1,53,000
Surplus After Tax	2,27,500	2,45,000	3,15,000	3,57,000

2.   Calculation of Payback Period :

Year	Cash Flow	Cumulutive Cash Flow
0	(10,00,000)	(10,00,000)
1	2,27,500	(7,72,500)
2	2,45,000	(5,27,500)
3	3,15,000	(2,12,500)
4	3,57,000	1,44,500

Payback Period = 3 Years and $\{ \frac{2,12,500}{3,57,000} \}$ Years

i.e 3.60 Years

i.e 3 Years and 0.60 X 12 months = 3 Years and 7.2 months

i.e 3 Years and 7 Monthsand0.2 x 31 Days i.e. 3 Years 7 Months and 6 Days.

v.   Merits :-

1.   This method is simple to understand and operate.

2.   It makes clear that there can be no surplus unless cost is recovered. When funds are limited it is always preferable to undertake the projects with a shorter Payback Period.

3.   This method is used in periods of high uncertainty or instability where it is prefered to recover the cost as early as possible because of uncertainity faced in future or in the times of economic recessions.

4.   The liquidity aspect is given due consideration. Thus this method can be usefull in the period of liquidity crunch.

vi.   Demerits :-

1.   This method stresses on recovery. Thus some project may have a high profitability but the capital recovery may be after longer time.

2.   The method completely ignores the time value of money. As money today is more valuable than money tomorrow, this concept has to be considered. Hence the Discounted Payback Method may be more useful.

b.   *Discounted Payback Method :-*

I.   Meaning :-When while calculating the Payback Period the Cash Flows are discounted, then the Payback Period is called as Discounted Payback Period. This method is more appropriate while calculating the Payback Period because the value of money is constantly falling. Thus Cash Inflows received today are more valuable than the Cash Inflows received in future.

ii. **Steps for calculation :-** The calculation is similar to the calculation of Payback Period, only the Annual Cash Flows taken has to be discounted at an appropriate discounting factor.

iii. **Decision Criteria :-** The project having the lower Discounted Payback is to be selected. The Decision Criteria is similar ti that of Payback Period.

iv. **Example(s) :-Project Cash Inflows are available :**

Year	Cash Flows (Rs.)
0	(10,00,000)
Annual Cash Inflow	2,00,000

Calculation of Discounted Payback assuming Discounting Rate at 10%.

Year	Cash Flow	Disc. Factor	Disc. Cash Flow	Cumulutive Cash Flow
0	(1,00,000)	1	(10,00,000)	(10,00,000)
1	2,00,000	.91	1,82,000	(8,18,000)
2	2,00,000	.83	1,66,000	(6,52,000)
3	2,00,000	.75	1,50,000	(5,02,000)
4	2,00,000	.68	1,36,000	(3,66,000)
5	2,00,000	.62	1,24,000	(2,42,000)
6	2,00,000	.56	1,12,000	(1,30,000)
7	2,00,000	.51	1,02,000	(28,000)
8	2,00,000	.47	94,000	66,000

Hence, Discounted Payback = 7 Years and 28,000 / 94,000 Years = 7.298 Years

= 7 Years and .298 X 12 Months = 7 Years and 3 and 1/2 Months.

v. **Merits :** The time value of money is considered in this method. Thus the Drawback of the Payback Method is eliminated in this method.

vi. **Demerits :-** An appropriate discounted rate has to be used. If a wrong disconting rate is used then the results will be misleading.

Conclusion :

Thus Payback Period Method and Discounted Payback Period Method are handy Methods for students to decide how many years exactly they will require to recover their money invested in the educational project. This method is of utmost use especially in current situation, where due to high Inflation in most of the countries, there are challenges of recession in the economy, the best way ahead is to recover back the money invested as early as possible. In such situations the educational project which recovers money early will be selected.

The speciality of these Methods is that it can be used by even non finance field students to take decisions about the financial feasibility of their education options, and select the best option for them.

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