Financial Management for Managers
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Lecture 35
Estimation of Project Cash Flows Part 07

Welcome all. So, in the previous class we started working on the say cash flow estimation for a special product being introduced by the company which is called as the, say India Pharma Limited, but because of the shortage of the time, we could not complete the entire solution or entire problem we could not solve. So, I left it half done, but we will resume it from there, where we have already left it and we have missed the part of the things we have already done and where we have left it, we will start from there onwards.

So, in the previous class what we did was that we estimated the say cash outflows in the current period that is going to be 120 million rupees, 100 on account of equipment and 20 on account or working capital. And after that in the say a number of say subsequent years 1 to 5, we have estimated the revenues, we have estimated the cost part and we have estimated the loss contribution.

Because introduction of the new product K-cin will cause a loss of contribution to the existing product or the sales of the existing products and consequently the loss of contribution coming from the existing products because company as a whole as manufacturing 16 products before introducing K-cin.

So, we have adjusted for the loss of contribution and the loss of contribution is also, because it is the opportunity cost so, it has to be treated like a cost and we have to means factor it against the revenue being generated by the new product.

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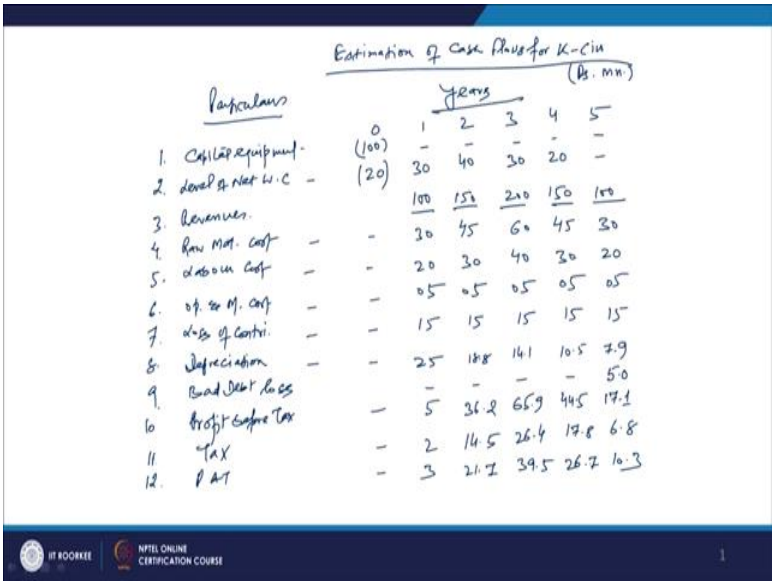

Now, we take the next head of the cost here, though it is a non-cash cost, but it is a cost. So, that is the depreciation that is the next part is that is the depreciation. This is going to be the depreciation, the next head of the cost is the depreciation, how much depreciation is there?

The depreciation written here is that they are going to charge the depreciation on the written down value method on the equipment, fixed equipment but the rate of depreciation is 25 percent.

So, rate of depreciation is 25 percent, it means equipment cost is how much? 100, so in the first year how much depreciation will be there? At the end of the first year the depreciation will be 25 percent and that will work out is how much? 25. Next year this will be 18.8 percent, then the next year onwards, it will be not onwards but next year it will be 14.1, then it will be 10.5 and then it will be 7.9.

Next contribution is the, sorry next last year's depreciation will be 7.9. We will have to charge for this depreciation provide for this depreciation. Next is the loss and loss is also treated like a cost. If you recall how we prepare the profit and loss account, so in the profit and loss account we show all the cost and the losses.

Because profit and loss account is basically a nominal account and rule of the say recording the transactions in the nominal account is debit for all expenses and losses and credit for all incomes and gains.

So, all expenses and losses, all expenses we are debiting here, it is basically a part of the or a say replica of the say profit and loss account, because ultimately whatever the inflows in the form of the revenues, we are gathering, they have to be adjusted against the cost.

And finally, we will have to calculate the profit before tax, profit after tax because working out the net cash flow requires the working out of the profit first and then we will add back certain non-cash expenses into the profit after tax. So, we will work out the cash, net cash flow available from the project.

So, in this case we are going to take this non-cash expense depreciation and then we are going to take the loss and this loss is on account of what? Bad debt loss, loss on account of the bad debt, so we are going to take this, loss on account of the bad debts. So, this loss is how much? We are going to take care of the bad debt loss.

So, this loss we have to be treated like a part of the cost. And if you take this as a bad debt loss in this case, it is clearly given to us that the total investment made in the working capital that it 20 percent of the sales at the time of the termination of the project, this total amount will be realizable back and as a principal also, the working capital is realized back bearing any kind of the bad debts if are there.

Because one important component of the working capital is the sundry debtors, so sundry debtors arise and appear in the balance sheet just because of the credit sales and 100 percent of the credit sales may not be recoverable. So, part of the credit sales which are not recoverable they are called us bad debts. So, in this case, we are clearly given here that there will be the bad debt loss, but not in the all the years that too in the only in the last year.

So, we will have to factor for that and that is how much that is further, this loss is for 5 million rupees, this loss is for the 5 million rupees but since it is a loss, it has to be taken into account. So, next thing is now we have to take into account is the PBT, profit before tax this is called as PBT, profit before tax because here we have got the revenue.

This revenue is already calculated by us and here all other are the your cost figures including loss and opportunity cost. So, these are the cost figures if you look at this, so you can easily find out what is a profit before tax? In this case you will find out it is 5 means sum total of the all cost items you have to do, all expenses you have to do and then that total we have to subtract from the say the total revenue we are generating.

So, what is the total cost? 30 plus 20, 50, 55 this is going to be 70 and this is going to be 95. So, 95 is the total of the cost loss this opportunity cost and the depreciation that is a non-cash expense. So, against the revenue coming up, the inflow coming up of the 100 million rupees the cost expected to take place is the 95 million rupees.

So, it means the resultant profit before tax will be how much? 5 million rupees, so we have calculated that PBT is the 5 million rupees. In this case, it is going to be more now, profit before tax is going to be more and this is calculated as 36.2. In the next case, it is going to be how much? 65.9.

In the next case, it is going to be 44.5. And in the last case is going to be 17.1, it is simply the subtraction of the total cost including the non-cash cost and the bad debt loss is from the total revenue and whatever the resultant figure is that figure is called as the profit before tax, that figure is called as the profit before tax.

So, we have already calculated now, profit before tax 65.9 was this cost. So, we have calculated the total cost that is the cost revenue and now the profit before the tax. Now, in this case, we have to look at, we have to work for the tax figures. How much is the tax? And tax in this case has to be taken as how much? The tax rate was given to us 40 percent and you have to calculate the tax rate is a 40 percent.

How much is the 40 percent of 5 that is going to be 2. So, this is 2, in this case it is going to be how much? 14.5. And in this case it is going to be 26.4. In this case it is going to be how much? 17.8. And in this case, it is going to be 6.8. So, this is going to be the tax part.

So, now after taking it into account, the tax part will have to calculate now the PAT that is a called as a profit after tax the column number 12 is the PAT, profit after tax. So, after this we will move to the next sheet. So, this is a profit after tax PAT. So, how much is the PAT given here? For calculating the PAT, we have to now subtract it from the profit before tax you have to subtract the tax.

So, the PAT is profit after tax in this case is how much? It is 3. In this case it is going to be how much? 21.7. In this case it is going to be 65.9 minus 26.4 is going to be how much, 39.5, in this case it is going to be 26.7, in this case it is going to be 10.3. So, we have calculated the PAT, we have calculated here the PAT.

This is the first source of the say cash inflow or the total net cash flow this is the first source. And if you take this amount, so it means the profit after tax which we have calculated is 3 then in the second case 21.7, in the third case 39.5 then it is 26.7 and 10.3.

Now, we will have to go for now move towards because whatever is possible in the next 5 years, we have already calculated. We built up the project in the current year and in the next 5 years we estimated the total say outflow on account of the working capital changes only because fixed cost is not going to change.

Then we estimated the whole revenue available, the cost to be adjusted against that revenue and the profit after tax going to be available over the next 5 years period of time, we have already calculated and as we know for calculating the net cash flow, we have to means first workout the profit after tax, we have calculated this part.

So, now, after calculating the profit after tax, we are moving towards now the say termination of the project because we are now left with the information which will be more relevant for the year 5. So, we will be moving towards that. So, let us move to the next sheet here.

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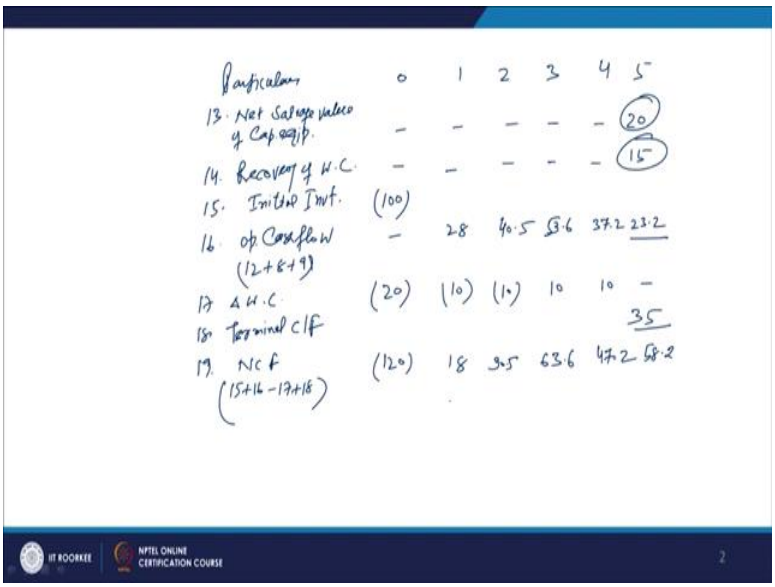

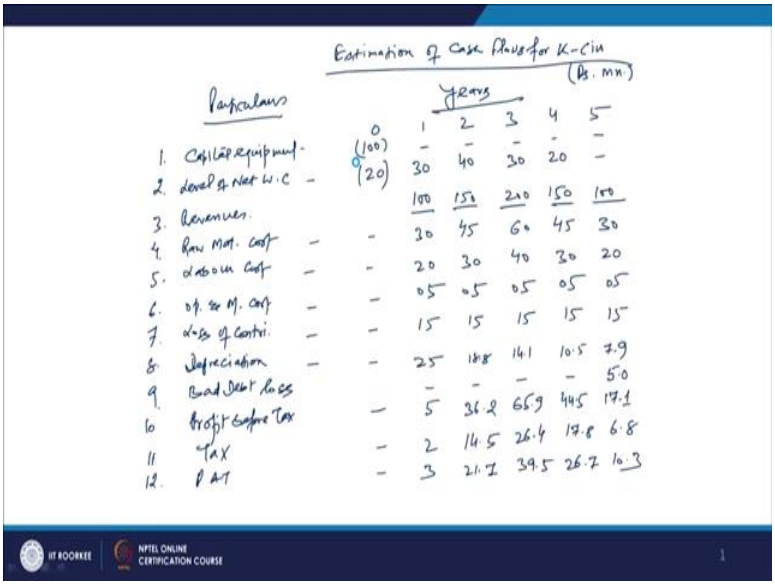

And in this case, when you move to the next sheet again, I am putting here the particulars and then we will be taking the years. So years are 1; 0, 1, 2, 3, 4 and 5 years, so after calculating the PAT, the next item is the column number 13. And it is the net salvage value, it is the net salvage value of capital equipment's of the capital equipment's, net salvage value of the capital equipment's. So, how much it is going to be net salary value of the capital equipment's?

This is going to be available which is clearly given to us is the net salvage value, because it is not available in this, this and this year only the last year, the year of the termination and the salvage value was given to us in the case was 20 million rupees will be available as the net salvage value of the say capital equipment. This is the information available.

And column number 14 says that the recovery of working capital, because working capital is fully realizable. So, recovery of the working capital will be something like how much is the working capital we have invested in the till now is the working capital was 20 million rupees which was at the end of the fourth year and which was irrelevant for the year 5. But out of that 5 have become bad debts, they have already taken care of that 5, loss of the bad debt is here 5 we have taken care off.

So, it means now the recovery will be of this will be how much? 15 million rupees, so it means it not in this. But in this case it will be coming back to us as the 15 million rupees the recovery of the working capital. And finally, what is the initial investment? Initial investment now is initial investment, now is how much? We have made here is that is a 100 million rupees because working capital is recovered.

So, it means initial investment was say 100 rupees, 100 million rupees and against the 100 million rupees, now the, we have to work out here is the operating cash flow, operating cash flow, operating cash flow. So, if you calculate the operating cash flow here available from this entire thing.

So, we have to take here as what is the entire case, we have to say draw this information from the previous calculations, previous slide or the previous sheet and the operating cash flow comes up here is as that is the 28.

In the next case it is 40.5 and then it is the 53.6, 53.6 and similarly we will be going forward, so 53.6 is the operating cash flow for the year 3 and for the year 4 is how much is this? This amount is going to be 37.2. This amount is 37.2 and this amount is lastly 23.2. This amount is going to be 30; 23.2 is the last amount.

So, in this case, this amount we have to correct it little and this will come out as 37.2 operating cash flow, how you have calculated operating cash flow? For your simplicity and for your better understanding, I would say it is a sum of the column number 12, 8 and 9. This is the total of the two columns, column number 12, column number 8 and column number 9. So, this is a sum total of this.

So, what was there in these columns? Column number 12, column number 12 is a PAT, we have to take this PAT then we have to take the depreciation because it is a non-cash expense and 9 is the bad debts because bad debts are also the source of the cash because it is only a book entry we make here and this amount which is lost as a bad debt because of the non-recovery of the credit sales that has to be recovered back by debiting the same amount in the profit and loss account.

So, in this case it is 12 plus 8 plus 9. So, that gives you the total figure of the operating cash flow and in this case of the operating cash flow, now, we have to look at the changes in the net working capital. Next thing is the adjustment for delta that is this sign is delta changes in working capital.

So, we have to look for the changes in the working capital now, here it was how much? 20 million rupees which was invested here and in the say next year, this was how much? 10 was the investment increased because how much was the investment we made in this case?

The working capital has increased from 20 to 30, 30 to 40. But after that it started going down because being a 20 percent of sales, we have seen that the sales also went down or started going down. So, we have to means accordingly changed.

So, we have increased the working capital means initially it was 20 percent of the sales which is 20 millions, then in the say by the end of the first year it increased by 10 millions and in the at the end of the next year it also further increased by 10 millions. And then it started decreasing and it started decreasing in the year number this by 10, in this year also in the year number 4 by 10 and in this year there was no working capital required because we are not going to take the business forward to the sixth year.

So, finally, means we have to calculate now the terminal cash flow, column number 18 is the terminal cash flow and terminal cash flow given to us is how much? Terminal cash flows are only these two fingers. We are going to get back 20 of the fixed assets and then of the 15 of the working capital.

So terminal cash flow is available is 35 because it is relevant for calculating the net cash flow. It is relevant for calculating the net cash flow. So, we have to put it here, this is 35 terminal cash flow is 35 and the last column will come out here is that is called as the NCF, net cash flow and this net cash flow comes up here as 120 as the outflow negative figure because we in the zero period in the current period we invested 120.

And then we have, we are left here with the 18, 28 minus whatever the total cash operating cash flow was there, out of that 10 was invested. So, we are left with that net cash flow, at the end of the first year we are left with the 18 million rupees, then here we are left with the 30.5 million rupees, 30.5 million rupees. And in this case now, I think we have the positive figures. So, it is now the 63.6.

So, now the recovery has started, recovery of the working capital has started because sales have also declined. 63 this is called as 47.2 this will be in this case and last year will be the sum total of this and this. So, it means 35 plus 23.2 will be how much? 58.2, 58.2 millions this will be called as 58.2 millions. So, the total, means cash flows we have worked out here and this cash flows is how much that outflow is 120 millions in the current period.

Inflows are in the subsequent number of years and this inflow is in the year 1, we have calculated which is called us net cash flow. You should not be confused. So, how we have calculated it? Column number 15 plus 16 minus column number 17 plus 18, so it is for your

reference 15 plus 16, 15 plus 16 is how much, initial investment we have taken here and the operating cash flow.

So, we have to means this is relevant only for the cash outflow column number 15. And 16 is important for us for all the remaining is years, year 1, 2, 3, 4, 5. So, we have taken here minus 17, 17 is the changes in the working capital. So, we have taken this into account. And finally, we have to then calculate the terminal cash flows, which is 35. And finally, the net cash flow we have calculated here is that is 120, 18, 30.5, 63.6, 47.2 and 58.2.

So, this way we have calculated the net cash flows and means after adjusting all the things, the opportunity cost of capital and at the same time we have adjusted for the bad debt losses also, we have adjusted for the non-cash cost which is called as depreciation also. For adjusting all these costs, we have to means take into account all these things and after say adjusting for everything, we have worked out the net cash flow.

So, the difference between this problem and the previous problem was previous problem was given to us like this problem as it is given here. But the previous problem was already solved in the PPT, so I thought that one problem we will do here, we will solve here. So, that finally when we do it here and make all the calculations here and I show that how the cash flow, net cash flow will be worked out.

Then it will be more clear to you it will be more convenient for you to understand that how the net cash flow can be estimated or how the estimation of the cash flow takes place. So, now, till now what we have discussed is that is the estimation of the cash flows for the new projects. If we want to say maybe a standalone project or we want to add up the new product or the new item or if anything new into the existing business for the growth of the business that we discussed.

So, we estimated the cash flows in two different ways. One was that when the cash outflow is also constant, cash inflow over the, of years is also constant, how to calculate the net cash flow? Then we added some more you can call it as wrinkles into the second problem, and we moved towards more practical situation rather than the theoretical one.

And in that situation, what we assumed in this second problem, that cash outflow is constant means that is only in the 0 period and that is only the one-time cash outflow, we do not need to make say time and again investment in the subsequent years also. But in the next 5 years,

the life of the project or that particular product was estimated to be 5 years, after the 5 years it will be phasing out.

But the important point here was that whatever the revenue we have estimated or we have means try to find out is that we estimated that it will not be stable, it will not be constant, it will be fluctuating, it will be changing. Sometime it will be going up or sometime it will be going down. And that is more practical situation because practically it happens in the market like that.

So, if that happens, if that happens, how to estimate the say cash flows and opportunity costs, bad debt losses, all these problems also be could a factor for and when we did it here, we calculated the net cash flow here and I think now, you should be clear about that how to estimate the cash flows for the new products or for expansion of the existing say business activity or maybe starting a new business or evaluating any project and estimating the cash flows for that project when, it is a standalone facility.

Next question arises now that if it is not the new project, or if it is not the addition of the one more product into the existing range of products, but if it is a replacement, investment proposal, replacement of the existing facility with the new facility and that is also a very-very important decision we have to take sometimes.

Sometimes what happen? We have the plant of the lower capacity, so we have to dismantle that plant and we have to replace it with the new plant, new machines of the higher capacity. Because there is more better performance required in the market, bigger say capacity machines are required because possibility of selling more in the market has arised and we want to manufacture more, we want to sell more.

So, if we want to manufacture more and we want to sell more, in that case, in that case, what we have to do here is that, that kind of the proposals or estimation of the cash flows in that kind of the proposals will be called as that is the, say cash flow estimation in the replacement projects.

In the replacement projects that if you want to replace the existing set of the machines with the new machines, then how to go for the say estimation of the cash flows, that is going to be now a typical problem and some important factors have to be borne in mind in that and in this case, some important things are say important factors to be taken care of here are say given here in this table, because, why this table is important?

Because sometime we say commit a mistake while workout the cash flows for a replacement proposal, what kind of the mistakes we commit? We correctly estimate the cash inflows expected from the new machinery or the new plant coming up as a replacement of the old one, but we do not factor the negatives and positives of removing the old machine.

Because we are only considering, if we are only considering the cash inflows which is expected or the increased performance which is expected from the new machine, it means you are only taking care of the advantages of replacing the old machine with the new machine because revenue will increase. It may be possible that because of the new technology the cost may come down.

So, the net cash flow may increase, but if there are the positives advantages of replacing the say old machine with the new machine, there are certainly disadvantages also. Because, when you are going to estimate the cash flow, you should factor for, that had we not replaced the old machine with the new machine, the old machine was the old plant, old say machinery was also going to give us certain say revenue, salvage value then the say cash flow.

So, means if you remove that, if you have brought a new machine by replacing the old machine, so it means certainly you are going to improve the performance, but the negative effect of removing that machine also have to be borne in mind.

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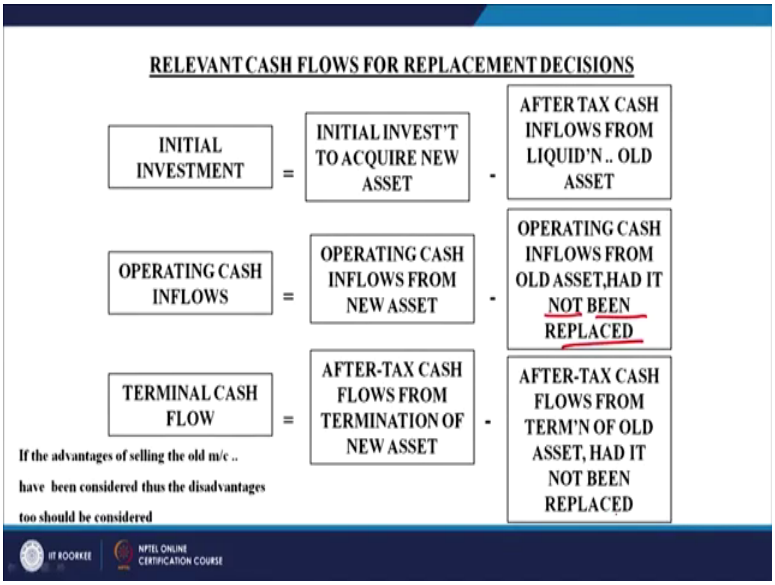

So, it is clearly written here, if the advantages of selling the old machine have been considered, thus the disadvantages should also be considered. You cannot say that the old machine was totally redundant. So, it should be totally thrown out and the say bad effects or

maybe the disadvantages of because if that machine is not there in the business. So, the advantages of that will not be there with us.

So, it means that is a disadvantageous position for us. So, we have to means think it in totality that what are the positives of removing the machine and what are the negatives of removing the machine or replacing it with the new machine. So, this entire process we have to follow in that calculation or in that situation. What is the process available here? Initial investment, you have to calculate, how to calculate the initial investment?

For calculating the initial investment, now, you have to take into consideration initial investment to acquire the new machine. Initial investment made to acquire the new machine minus after tax cash inflows from the liquidation of the old machine.

Because total cash outflow is not going, for example, the new machine is going to be available for the 500 crores new plant 500 crores and the old machine you are going to sell in the market for 200 crores. So, what is the net cash outflow? 300 crores, so that is a very important factor.

So, initial investment will be how much? Total cash outflow on account of the new asset minus cash inflow available from the say liquidation of the old assets. So, this is the first important point. Next important point here is operating cash inflows, we have to calculate.

After the cash outflow, we have to calculate the operating cash inflows and for calculating the operating cash inflows, what you have to do here is operating cash inflows from the new asset or the new machinery minus operating cash inflows from the old asset, had it not been replaced? Had it not been replaced, it is a very important point here, had it not been replaced.

So, what is what could have been there? It means we are talking about the, this part only advantages, but not the disadvantages that if this will be there, this will not be there. You cannot have both. So, if this is going to be there, then if it is not going to be there, then you cannot say only we are going to have this, if this was not there, this was there. So, we have to factor for this.

And finally, for calculating the terminal cash flow here, what you have to do here is after tax cash flows from the termination of the new asset. After tax cash flows from the termination of the new asset minus after tax cash flows from the termination of the old asset had it not been replaced?

So, these are the 3 important components to be borne in mind. While going for estimation of the cash flow for the replacement proposals, you have to bear in mind the three important things because otherwise also in the cash flow analysis or estimation of the cash flows, we always bear 3 things in mind.

First of all, we workout the initial investment in the current period or in the 0 period, then second thing is we workout the operating cash flows by estimating the revenue for the say foreseeable number of years, subtract the cost expected and that gives you the operating cash flows, cash inflows largely.

And then we calculate the for calculating the net cash flow, we calculate the terminal cash flows and finally, we calculate the net cash flow. So, this process we have been following, we will be following the same process now also, but only point of question here is that disadvantages of replacing the machine will also be taken into account and we have to follow this methodology for initial investment you go like this, for operating cash inflows you go like this and for the terminal cash flows you go like this.

So, how to calculate the cash flows or how to estimate the cash flows for the investment proposal, which is basically related to the replacement of the existing machine or existing asset with the new asset, if it is a replacement proposal, a capital investment proposal, but the replacement proposal not a new investment proposal.

So, in that case, how to estimate the cash flows? One more problem we will see, we will discuss, we will see, I have got the problem also, I have got here in the PPT, the solution also. So, we will see here that how what important points have to be kept in mind while estimating the cash flows for the replacement proposals that we will do in the next class. Till then, thank you very much.