Financial Management for Managers
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Lecture 31
Estimation of Project Cash Flows Part III

Welcome all, so we are in the process of learning about the estimation of the cash flows for the new investment proposals or for the new projects and in the previous class we initiated the discussion on this particular topic that is a cash flow estimation and we discussed the some basics or the fundamentals parts of the fundamental requirements of this cash flow estimation.

And we discussed some basic principles of cash flow estimation process, as we have seen in the previous class also that there are the four important principles of the cash flow estimation which are very important.

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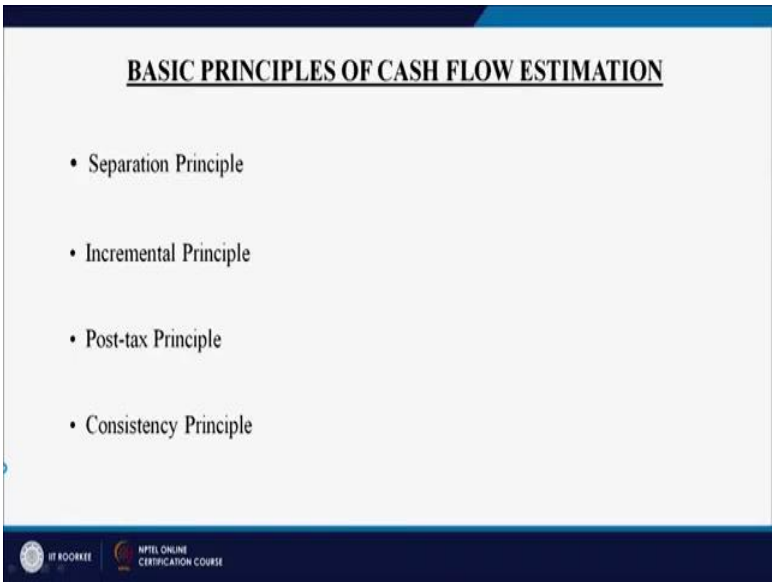

First one is the separation principle, second one is the incremental principle, third one is the post-tax principle and fourth one is the consistency principle. So, separation principle I have discussed with you at length, where I have talked to you that we have to treat it in two say, different ways the inflows and the outflows of the cash and like balance sheet, in the balance sheet also we have the one side which talks about the sources of the funds and on the other side we talk about the applications of the funds or in the simpler language, we call it as the say liability and the capital side of the balance sheet and the asset side of the balance sheet.

So, on the one side, the funds flow in the business and on the other side or from the other side, it goes out so, we means convert that cash or that investment into the assets. So, we have to separate it. On the one side we have to show it as the inflow, on the other side we have to show it as outflow. And finally, on the termination of the project, what is the terminal cash flow available is, we have to calculate that, so that was a separation principle I have discussed that length there.

Now, I will take you to the next two, three other principles because they are very important. Cash flow estimation is not a easy task, it takes time to understand and to be clear about the basic fundamentals and for that reason, we have to means say bear in mind that all these things are equally important, all these principles are equally important to understand before we move into the process of estimating the cash flows practically or physically.

So, after separation principle, the next important principle is the incremental principle is the incremental principle. So, when you talk about the incremental principle, what we talk about here in this principle is means we have to very careful, while estimating the cash flows and incremental principle plays a very important role.

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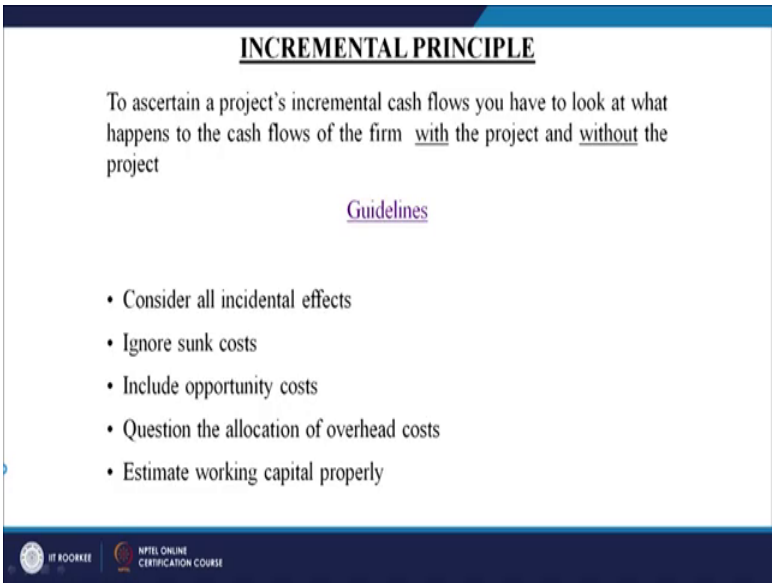

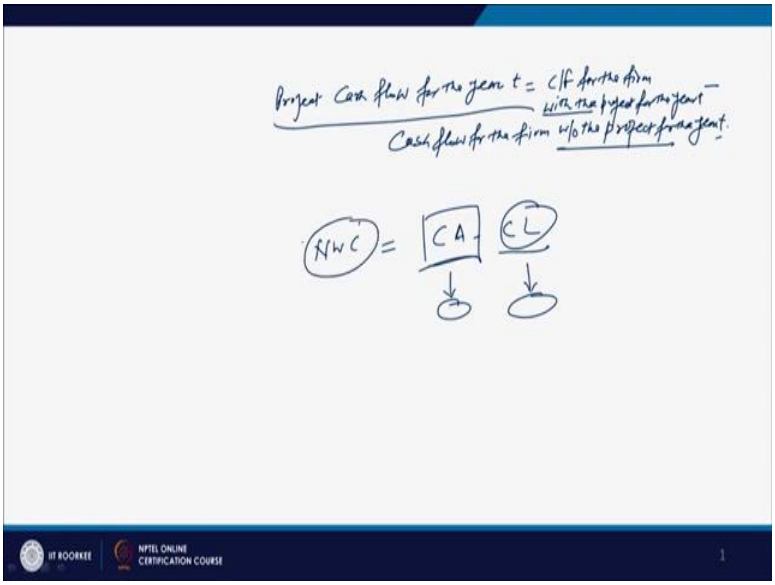

So, what this principle says, under incremental principle we have to ascertain a project's incremental cash flows that means, in which we have to or the incremental cash flows, you have to look at what happens to the cash flows of the firm with the project and without the project. So, it means again let us again understand it to ascertain a project's incremental cash flows, you have to look at what happens to the cash flows of the firm with the project and without the project.

So, when we take up a project, what will be the say addition or say deletion, maybe reduction in the cash flows or if we do not take the project, if we carry on the process without this project, how the cash flows of the firm will be there? So, incremental will be means, normally we expect that there is no reduction in the cash flows, otherwise why to take up a new investment proposal.

So, we expect that there will be increase in the cash flows, but that increase is considered as an incremental increase or the incremental cash flows because existing amount, we are earning some amount of the cash flows. For example, the firm is having, say four different products they are manufacturing, and the total cash flows after say means adjusting for all kind of the cash outflows and everything. Finally, the free cash flow available to the shareholders is somewhere like say 100 crores.

So, if we take up a new project, new investment proposal and we go for adding up the one or new two new products in the existing product line, so whether our cash flows are going to increase or our cash flows are going to remain stable or some any other kind of change is there normally we expect there is going to be a increase.

So, that increase will be considered as, for example the cash flows become now from 100 to 120 crores, so, that 20 crores will be the incremental cash flow. So, we have to means locate it at that, if we take up the project, what will happen and if we do not take up the project, but we will but will happen so, you can simply means show it like this, that the say cash flows of the project.

Incremental cash flow of the project you can calculate is like this, that is the project cash flow, project cash flow or the firm cash flow you can call it as, the project cash flow for the year T the project cash flow for the year the project cash flow for the year, for the year say we call it as year T, so you will calculate it, cash flow for the firm, cash flow for the firm with the project, with the project for the year T, for the year T minus, minus cash flow for the firm cash flow for the firm without the project, without the project for the year, for the year T.

So, it means cash flow for the firm with the project for the year, one particular year T and cash flow for the firm without the project for the year for one particular year which is called as year T for in any particular project and that difference will be called as the project cash flow for the means year T or for that particular given year.

So it means we are adding up this new project or this new investment proposal and we are going to find out that with the project, how much is going to be the incremental means the total cash flow that is that existing cash flow plus the cash flow coming from the new project and if we do not take it up, that is a minus cash flow for the firm without the project for the year T for the same year, if you take up the project how much cash flow will be there, if you do not take up the project how much cash flow will be there, so that difference will be called as the cash flow for the new project for the given period or that particular year which we call as T.

So, we have to means look it at always, not in the totality we have to look at the cash flow, we have to look at the cash flow in the on the incremental basis and for calculating that incremental cash flow, we have to try to find out that whether the cash flow is going to increase as compared to the cash flow without the project or cash flow is going to remain the stable or maybe there is going to be any negative impact upon the existing cash flows. That is a very very important thing to be say taken into consideration and borne in mind. While following this principle of incremental cash flow, we have to follow certain important guidelines. And these important guidelines are here four, five guidelines are here.

And first guideline is consider all incidental effects. Now, in this case it is a very important part because when we take up the project, we have to see what is going to be the incidental effect, it may be possible that the new product we are going to add up is going to create the problem for the existing products of the firm.

Or it may be possible that we are going to add up the new product increase the sales of the new product, but because of that, the existing resources of the firm's which are being used for the existing four products, they have, they start feeling the pressure because of the introduction of the new product fifth product and it may impact the performance of the existing four products negatively the sales or the performance of the existing four products may come down. So, we have to be very careful in that part.

And, what is going to be the incidental effect in terms of sales of the existing products because of the sales of or adding up of the new product. Second thing is what is going to be the incidental effect upon the expenses especially the overheads, because when you talk about the direct expenses, all direct expenses are directly related to all the different products.

Talk about the material cost, talk about the labor cost, talk about the direct overheads cost that is directly attributable, because if you manufacture one category of the product, say product say, number 3 or product number 4, or maybe this new product number 5, you will incur only raw material, if you go for the manufacturing, if you do not go for the manufacturing of any of the products, you will not incur any raw material cost.

Same is the case with the direct labor, same is the case with the direct overheads, those expenses which are directly identifiable with the introduction or manufacturing of any product or not manufacturing of any product, they are called as the direct expenses. But those expenses which are indirectly affected means there is a common pool of expenses and say means you cannot directly identify that how many expenses are happening or taking place because of manufacturing of the product X, Y, Z, A, B or C, so that creates the problem.

So, in this case in the overheads also especially in case of the indirect overheads, for example, if the indirect overheads are not going to increase, like administrative cost, like your, say your advertising cost, like your say selling and distribution costs, like you, your say other you can general expenses, if they are not going to increase by the introduction of the new product.

So, it means we are, we can ignore the say incidental costs also that okay we are introducing the new product directly they are going to be direct expenses which will be included into the cost sheet of the new product. But as far as the indirect overheads are concerned, they are more or less going to remain same within the given existing administrative cost, establishment cost, general expenses, selling and even distribution expenses. We are not going to incur something extra for this.

So, you can think about but if some extra expenses are going to be say say incurred for the introduction or for the say inclusion of the fifth product, then we have to take those into consideration, how those say extra indirect expenses are going to impact upon the cash flow we have to be very very means be careful about that.

One more important effect here is that is the say product cannibalization effect, product cannibalization effect is also there, product cannibalization effect is that you can simply define it as erosion of the sales of the existing products because of the introduction of the new products, because it may be possible that our attention is diverted from the existing four or divided now amongst the five.

So, if our resources are same, but if we are adding one or two new products into the existing say line of the products, it may happen that we are not able to take care of your our distribution channels of the existing four products as you were taking care of them in the past.

So, we may lose some of the sales, or sometime what happens we are going to introduce a new product which is somewhat similar or a substitute to the existing products. So, it may be possible, though you are coming up with a new product in the market, but it can serve the need of the either of the existing products also. So, the sales of the existing products maybe, say getting affected negatively.

So, the cannibalization effect have to be taken very seriously, whether the sales of the existing products are going to be affected negatively or not. If they are going to be affected negatively, then we have to means go for one important thing is that try to find it out quantify it that how much sales are going to be there for the from the for the new product and how much sales we are going to lose for the existing products.

And is there is something kind of that loss of the sales of the existing products because of the introduction of the new product if that is happening then you have to factor those losses of the sales or the loss of the revenue or the loss of the cash flows and that is called as the

technical term, here we call it as the negative incremental effect, we have to take into account in our cash flow that is called as a negative incremental effect.

So, when you take into account the negative incremental effect means, we show that in the our cash flow statement, like the loss of contribution of the existing products, loss of the contribution from the existing products, and if you show it, it is treated like a cost, it is treated like like a cash outflow or the loss of the revenue.

So, what will happen that if you treat it as a negative incremental effect the loss of the sales of the existing products, because of the new product in that case, what will happen, the new product may when we evaluate the whole means, means the whole cash flow available, the new product may result into the negative cash flows or the lesser cash flows, or it may not look like a profitable product.

So, we can think about it that if there is a some negative effect is going to be there or cannibalization effect is going to be there, then you have to evaluate it very carefully, can we avoid the introduction of the new product, because the net increase is not going to be too much, we are going to add up the fifth product, but it is affecting the sales of the existing four products.

So, it means, because of the erosion of the sales of the existing products, we are going to introduce it but the net result of the new product is going to be negative or sometime not very much positive. So, can we avoid it? But then you have to consider the important consideration that okay we can avoid it, but if our competitors introduced the product, which we are now proposing to introduce, then what will happen? Anyway we are going to lose the sales.

Now, we are going to lose the sales in favor of our own product. But in that case, we will be losing the sales in favor of the product introduced by our competitors. So, in that situation, what happens? That it sometime becomes inevitable that is better for us to introduce the product and if we are going to lose the sales of existing products. For example, you talk about a firm is manufacturing different kinds of refrigerators, different kinds of refrigerators.

So, we have say the four refrigerators different kind of the refrigerators we are currently manufacturing and when you introduce the more advanced or more say energy efficient or with the more features the fifth new refrigerator in the market, it may be possible that the

sales of the either of the four existing refrigerators may come down because people will shift from the existing of the products maybe from the product four to the product five.

Or the refrigerator number four to the refrigerator number five, because refrigerator number five is more advanced in the technology, in the features and the price difference is not that much, but you have to be careful here, if we avoid the introduction of that fifth refrigerator, but it may be possible that our competitors introduced that product.

So, sometime what will happen, that our customers for the refrigerator number four will be shifting say towards our competitors, because they have come out with the new product almost for the same price or little increase in the price, but with the more advanced features, so in that case we have to look the whole thing in totality, that if there is a complete entry barrier.

That the product is protected by the technology, say patenting or maybe any kind of the trademarking or any kind of the business agreements. If there are some strict entry barriers are there and there is means no possibility, there is no likelihood that our competitors will introduce a new product, which may become the competitive product for the firm in question, then the firm in question can avoid the introduction of the product number five, because it will lose the sales of the existing products.

But if it is there is no entry barrier, product is very simple, so, much of the competition is there in the market, then in that case, it is always better to introduce the new product and count upon the cash flows and ignore even the loss of the cash flows occurring because of the refrigerator number, say less lesser sales of the refrigerator number four that can be ignored.

Because any way we are going to lose the sales, because if you do not introduce the new product, somebody else will do it, then we will not lose the sales in favor of our means or within the firm, but somebody else will gain sweet peas in that case that negative incremental effect can be avoided. And we can say that what is the now cash flow from that adjusting four products plus the incremental cash flow from the fifth product.

So, means that can be taken like that but if it is say, there is no possibility that no competitor can come, then either we have to count it as a negative incremental cash flow rather than counting it as a positive because positive you are counting from the product number five, but the product number four sales loss should be counted as that is called it called as a loss of say existing contribution.

So, that should be say taken into account as a negative incremental effect and then the positive from the new product and then the net effect should be worked out. So, cannibalization effect working out the cannibalization effect is very very important consideration in say following the incremental principle.

Then we talk about the next important requirement here is that is of the ignore sunk cost. So, if you talk about the sunk cost. Yes, sunk costs should be ignored anyway, because they do not make any sense to keep on say thinking about the sunk cost. Now, what is a sunk cost? When we want to introduce a new product in the market.

So, sometimes huge preliminary expenses have to be incurred, they may be on say conducting the market survey or maybe say trying to find out that what new product can be manufactured and at the same time, say for the new product once we have identified the product and everything. Then how the will be manufactured, what will be the attributes, what will be the input requirements, so you have to incur huge R and D expenses, huge R and D expenses.

So, for incurring the huge R and D expenses means if you now you start counting upon that once we have now finally manufactured the product and the product is now about to go to the market or finally, the product goes to the market at that time, if you start counting upon the cost right from the beginning day one, when we started thinking about the product or the say introduction of the product, so what will happen? The cost of introducing the project, product will become very huge.

Now, for example, if say we want to identify a new drug, the drug manufacturing companies or the pharmaceutical companies they estimate in the market that if you want to come out with a new drug, new drug, it means it is not a process, new process, manufacturing that drug with the new process, but the new product itself means identifying the new molecule.

If you want to identify the new molecule, we are existing, the firm is existing pharmaceutical company, they are a manufacturing different type of the drugs, different type of the medicines, but they want to introduce now the new drug for curing one particular kind of the ailment.

So, there is one estimate that identification or identifying a new molecule, new drug in the market or for the market or for curing any kind of the different kind of the ailments, it

requires minimum 10,000 crores of Indian rupees 10,000 crores of investment and minimum 10 years period of time.

So, it means if we want to come out with a new drug and we are going to invest or we are ready to invest 10,000 crores, so larger part of that 10,000 crores should be considered as a sunk cost. Because if you tomorrow price the product like that our total investment is 10,000 crores and we have to recover now that the whole amount from the market plus the existing manufacturing expenses also, then what will happen the price of the drug will be so exorbitant so high that it may be beyond the reach of the people.

So, what you have to do is that till the date of identification of that molecule, whatever the cost has been incurred, that costs should be considered as a sunk cost and for calculating the present cash flows, we have to only, we have to only take into account the present manufacturing cost, selling and distribution cost, after sale service cost, administrative cost all these costs for giving shape to that product or that particular final product to be taken to the market that cost should be taken into account and then the revenue available from that total product after selling that in the market.

If you start recovering the entire 10,000 crore from that particular drug that it may be very difficult that the cash flows of this or the net present value of that particular new product will never become positive. So, we have to means consider initial costs, preliminary cost or R and D costs which we have incurred and sometime it may be very huge.

So, that cost has to be considered as a sunk cost. And we have to means focus upon the current cost, which is a manufacturing and selling and distribution cost of the product and compare that with the revenue for evaluating the product to be taken to the market or not to be taken to the market or especially for say evaluating the cash flow of the, calculating the cash flow of the say of that from the new product.

Then third, one important thing here is that include opportunity cost, opportunity cost is something like that, for example, we have the different resources available, so while investing those resources, for example, now the firm is already there in the market, they are already manufacturing four products. They want to introduce the fifth new product in the market.

So, that fifth new product will take invest cost, first of all you have to shell out money, you have to invest that that will be called as a cash outflow, after that the cash inflow will start coming in. So, we have to be careful that while thinking about investing their surplus funds

available with us for coming out with a new product in the market, we should be means open mindedly think about if we invest this surplus amount available with us in this product, how much return is available?

And if we invested somewhere else or we means say do not make use of these resources ourselves, we give it to somebody maybe if we have the investment, we can say may invest that in the market or we have the surplus capacity, we have the surplus buildings, we can rent them out or we can sell them off.

So, what is the opportunity cost of introducing the new product that also has to be taken into account because one resource or the set of resources have the multiple uses, and you have to select that use which is going to give you the best outcome, best cash flows. So, you have the number of options available, for example, adjusting a resources, if they are in the form of the plant capacity or in the form of the say, say some buildings or maybe other physical facility that can be rented out.

So, can be rented out can be sell it off or sometime it can be possible that if we manufacture product number five, or if we can strengthen the sales of existing four products, either of the two choices are there. So, you have to now consider it in totality that out of the given possible alternatives, what is the best possible use and if I invest this surplus resources into the new product, how much cash flow is available? And if I say use into the existing production, and manufacturing and selling in the market, how much say cash flow will be available.

So, means a clear cut, open minded opportunity analysis, opportunity costs analysis has to be done and what is the best outcome? We have to go for that. So, this is another part of the incremental principle which is very very important cost, important consideration. And the next one is a question the allocation of the overhead cost, question the allocation of the overhead of cost.

What are the overheads? As I told you, the overheads are those expenses which you can call it as the indirect expenses, direct expenses are directly attributable, if you manufacture the product, you are going to incur the raw material cost, you are going to incur the direct labor costs, you are going to incur the direct overheads cost, but sometimes indirect overhead costs is there.

So, you have to follow the principle here that if by introducing the new product, if there is going to be any increase in the fixed cost or the indirect cost, then only that increased part

should be taken into account. Otherwise if for example from the existing indirect expenses or the fixed expenses.

For example, the plant capacity there, if you are going to add up a new plant, then certainly you should take into account the depreciation of that new plant. But for example, we have the surplus capacity in the existing plant and we are going to make use of that and by making use of that we are going to introduce the fifth product.

So, there is no point say adding up those additional say indirect overheads into that say or subtracting it from the cash inflows or calling it as a cash outflow. So, that depends upon that if there is going to be additional overheads, allocate them to the new product cash flows or subtract them from the new products cash inflows.

But if there is no change is going to be there, then for the moment, you can ignore it also, because it is immaterial for us whether you introduce the product, you do not introduce the product, you are going to incur the same amount or the fixed cost or the indirect cost. So, it means in that case, means why to say considered at as a cash outflow because cash outflow is not taking place. And the one last important thing, we are going to talk about here is that is the estimate working capital properly.

It is a sometime what we do is, we consider as a very as a major mistake while working out the cash flows and we say sometimes commit a mistake and that mistake is called as say not estimating the working capital requirements properly or wrongly or wrongfully estimating the working capital requirements, because it should be clear when you adding up the fixed capacity or you are going to introduce a new product, it requires the cash outflow on the two important accounts.

One is on the fixed expenses, another is upon the short-term expenses which is called as the working capital. So, if you talk about the working capital part, in the working capital part, you have to be very careful that when you talk about, say thinking about or working out the working capital, we have to think in terms of.

Because working capital is estimated in terms of say, you can call it as what is the say total investment requirement in the fixed asset as a percentage of the fixed assets, we can work out the working capital requirements or sometimes as the percentage of the sales coming out of the new product, we can work out the working capital requirements.

Or if you do not want to follow these two approaches, then there is the operating cycle approach. So, that operating cycle means investing cash to meet the working capital requirements and then converting it again back into cash.

So, it means you need the working capital for buying of raw material, for paying of the wages salaries, then electricity expenses, water expenses, because your plant machinery and building, the capacity which are created for manufacturing the new product or adding the new product will be useful only if we have the raw material to use those machines, if we have the people to work on those machines, if we have the power to use those machines. If we have the proper water requirement, fulfill require requirement to fulfill the requirement of the existing manufacturing facility.

So, all those things are there, then only the fixed cost is going to be of any sense or going to make any sense, otherwise, it is not going to make any sense. So, what happens many times we are very serious or very seriously we work out the fixed capital requirement, but we sometime oversight or miscalculate the working capital requirements.

So, we have to very carefully work out the working capital requirement and in that case, we have to go for the networking capital requirement for working it out. We have to calculate the networking capital requirement, what is the networking capital requirement? That is the current assets minus current liabilities.

So, what is the current assets required? Current assets are required in terms of inventory, in terms of supporting the credit sales, in terms of keeping the cash in hand and cash at Bank. So, this is total is called as the current assets and then to fulfill this requirement of current assets, parts of the funds will be available in the form of the current liabilities.

Current Liabilities means suppliers credit is there or maybe the say your say, wages we have not to worry for at least thirty days or this power expenses or the water expense we have not to worry for the thirty days. So, this virtual credit is available to us. So, it means what is the total current assets requirement in the firm after introducing the new product and what, how much funds will be available from the current liabilities and the difference will be called as the networking capital.

So, that networking capital has to be worked out very carefully, we should not commit any kind of mistakes. One important, another important thing here is that, in case of the fixed assets, whatever the investment we make in the fixed assets that keeps on depreciating over a

period of time. For example, the life of the project is say five years, from the 0 year, 0 is the current year, and then the next 1, 2, 3, 4, 5 years are there the cash inflows are expected.

So, in those five years for example, we are going to use that plant machinery buildings for the five years all the fixed assets for the five years and the depreciation on the plant and machinery is going to be say 20 percent, so it means that value of plant and machinery is going to say be 0 at the end of the fifth year, but still for example, whatever that skeleton or maybe that, that that means structure is left out that can be sold in the market.

So, we can say, though the technical value will become 0, but say that structure of the plant and machinery will fetch some value. So, that is called as a salvage values, so while say calculating the say terminal cash flows, we calculate the salvage value of the fixed assets plant, machinery or sometimes the buildings also.

But in case of the working capital, working capital is recoverable in the full amount, working capital does not decrease, it remains the same amount because that investment which we are making, for example it is 20 percent of sales. So, 20 percent of sales you are investing where, in the inventory, in the credit sales, in the cash, maybe in the cash in hand then cash at bank, so we are investing there. So, at the point of or else the time of termination of the project, you can recover that full amount.

So, it is not to be treated like fixed assets, where only salvage value will be available as a terminal value, but in case of the working capital, full amount will be recovered. So, when you convert the current assets into cash, then the full whole amount, full amount has to be taken into consideration as a terminal value of the working capital unlike the terminal value of the fixed assets. So, be careful that while calculating the working capital requirement, always look for the networking capital requirement that will be required to be invested in cash.

Second thing is while calculating the terminal value, you have to assume here that the full terminal value at the time of the termination of the project full working capital will be recoverable and that cash inflow has to be counted or considered at the time of the fifth year or at the year of the termination of the project. So, there is a basic difference, major difference in the say terminal value of the fixed assets and the terminal value of the working capital or the current assets.

So, these are some important considerations to be borne in mind while talking about the incremental principle which is a very very important principle and we should be carefully means, considering all these points while working out the cash flows.

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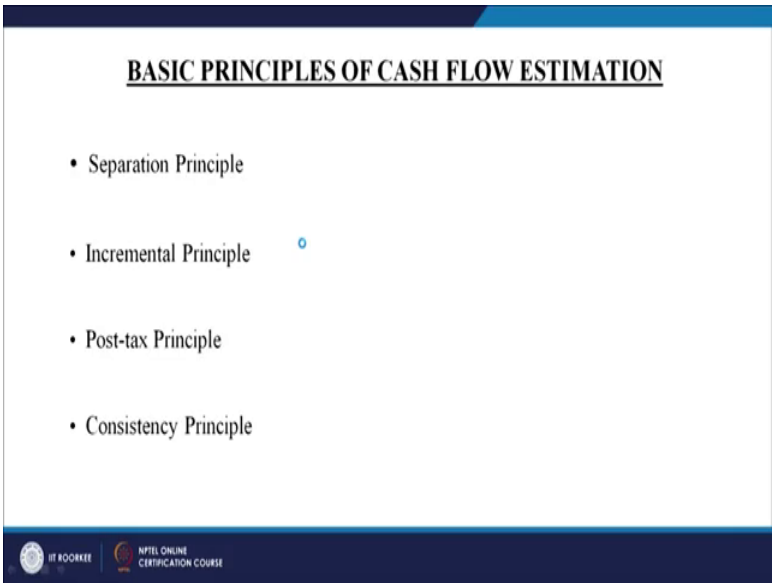

After that, two more principles are also there, post-tax principle and then the consistency principle, these two principles are equally important very relevant, very important while estimating the cash flows. But these two principles, remaining two principles, I will discuss with you in the next class. Till then, thank you very much.