Financial Management for Managers
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Lecture 30
Estimation of Project Cash Flow Part 2

Welcome all. So, in the process of learning about the cash flow estimation, what is the role of financial managers in the business organizations? Maybe it is a new firm or whether it is a existing firm finance people have to be there means if even a person want to start a start-up, want to start a new firm.

He must have some minimum idea of the finest or the financial management or if he does not know the finance himself he may be a technical guy, he can have somebody with him who knows finance and who can help him in say performing the financial functions because it is very important.

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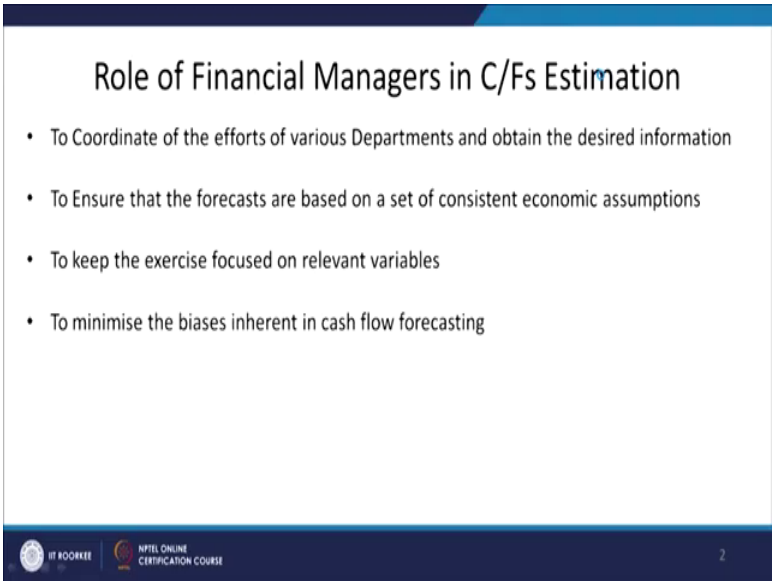

So, what normally the say financial managers are expected to do in estimating the cash flows, four important things. One is to coordinate the efforts, to coordinate the efforts of various departments and obtain the desired information. So, because what happens, as I told you that market and demand analysis, technical analysis even financial analysis we have to do.

So, marketing part or maybe the market and demand analysis, the marketing people will be doing or maybe say if you are going to buy the ready-made information from the market some consultants or somebody even then we must be able to understand what kind of the information is there. So, somebody must be there taking care of the marketing functions.

And in the existing firms when they introduce a new product or a new service they already have the marketing department and marketing department is responsible for conducting the marketing and demand analysis. So, they cause the cost, means they are the one important department which need to be provided the funds.

Then the production department, then it is a purchase department, then is the distribution department, store department, so finance department's job is to ask the different departments that if we want to introduce a new product or the new service how much investment is required to be made? So, they are technical people they will make assessment of their funds requirement and finally tell to the finance department that total requirement will be this.

So, finance guy has to coordinate amongst the different departments if it is a existing firm. If it is a new firm, even then the entrepreneur or the person who want to go for a start-up has to perform these functions either by himself or by hiring the people or by making a team of the people as a part of the initial promoters of that particular idea, who has technical background, somebody maybe a B. Tech, then he has to bring in the team maybe some finance guy MBA finance or some marketing guy also so if it becomes a team of four, five people.

For example, when Infosys was created, so it was a team of the 7 people, it could have been created by the 1 person also, but creation of 1 firm by 1 person and creation of the firm or a new business by the 7 people makes a difference. So, we have to perform means and knowingly or unknowingly, whether actively or passively. We have to form the different functions and for that we need different people.

And finance guy's job is to take the estimates of investment in terms of the cash outflow as well as in terms of the cash inflow from the different departments. So, the coordination is important, and they do it.

To ensure that the forecasts are based on the set of the consistent economic assumptions, whatever the forecasts we make in terms of manufacturing the product, selling the product in the market, buying of the raw material in the market, how this all has been done, who has done it, what is his background about the market, about the purchase, about the raw material he has to means make sure that whatever the funds they are demanding for whether they are based upon the consistent existing assumptions in the market or not. So, again important function.

Then one more function is to keep the exercise focused on the, to say keep the exercise focused on the relevant variables. So, it means he has to say proper focus on all the relevant variables which have been say been taken into consideration. So, it means complete focus on the relevant variables he has to have because when you are talking about the market and demand analysis, what variables they have considered?

Whether the income of the people is considered, whether the particular age group is taken into account for which the product is being manufactured or we are talking about the geographical terrain of the country or maybe some total of the different factors or variables means he should be having some background idea that, how much funds are required to be invested in for a one particular activity how much they have invested, so very important component.

And last is to minimize the biases inherent in the cash flow forecasting, to minimize the say biases inherent in the cash flow forecasting. Normally what happens that when we talk about the cash outflow different departments intention they are biased towards asking for the higher amount of the funds, larger amount of the funds, more amount of the funds.

Whereas the say the marketing people are they are little conservative in their estimates, they should be conservative in their estimates. So, it means whether these biases have influenced the forecast or estimate some of the cash outflow and cash inflow this is his job. So, to coordinate the efforts of the various departments one.

To ensure that forecasts are based upon set say consistent, set of consistent economic assumptions and proper focus has been there on the relevant variables or not of the different people involved in say estimating about the cash outflow and inflow about the project. And last is that biases are minimum in estimating the cash flows. He has to make sure that people are more optimistic means not optimistic but they are their estimates are optimum and we will use the term optimum neither more, nor high nor low.

So, we will means look for some estimates some forecasts which are optimum. So, whether these are optimum estimates or not and say undo biases have not affected the people that is a very important consideration here. So, it means finance guy has to a very very active person, he should have the proper background. What to do and how to take the things forward and whatever the estimates are being done here whether they are acceptable or not.

Now, we talked about the elements of the cash flow stream we talked about the elements of cash flow stream.

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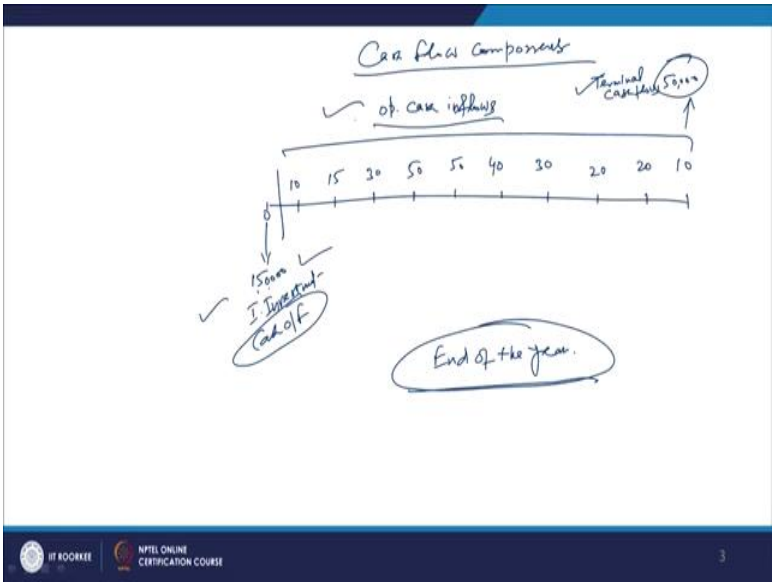

In the previous class we discussed one structure and that structure is here. So, I discussed this structure and I talked about the three things, one is a cash outflow, operating cash inflow and then we talked about the terminal value.

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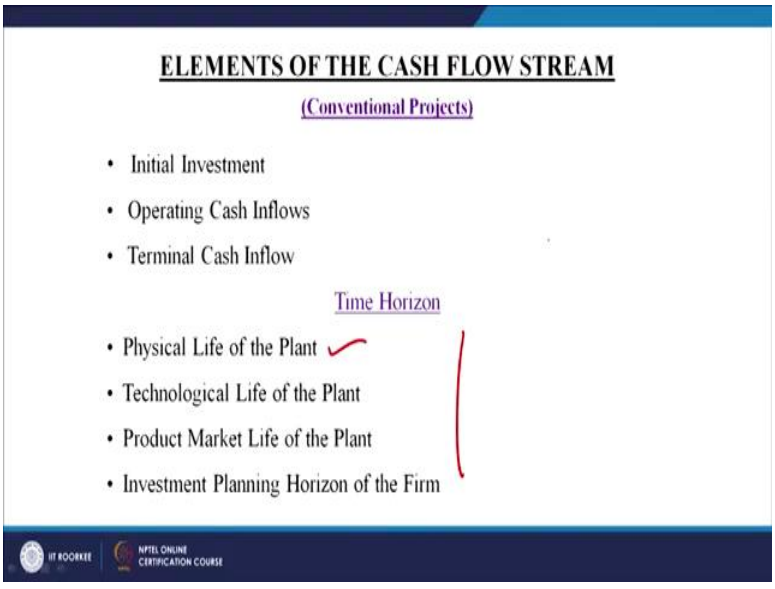

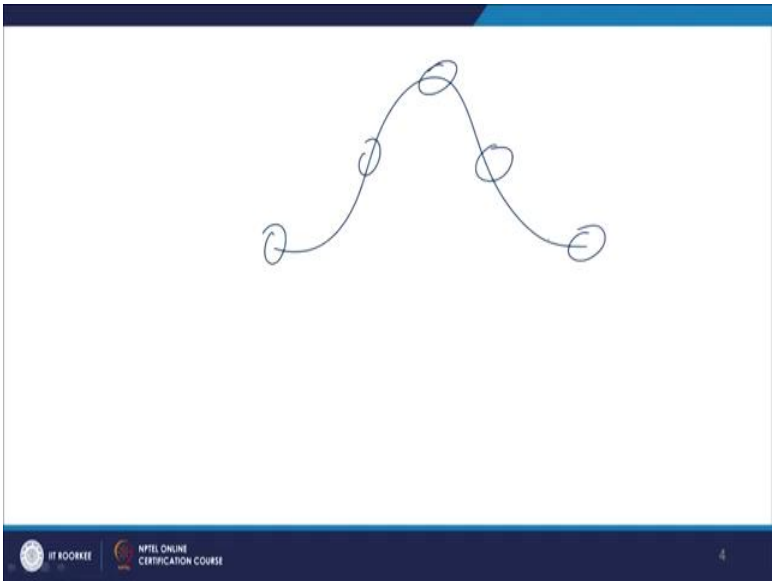

And this is the say these are the three important things we have to means consider them as important elements of the cash flow stream. These are the three important elements of the cash flow stream that is initial investment required to be made to build the project, operating cash inflows coming over a period of time and the third important thing is that terminal value of the project.

How much is the say the relationship between the or the quantum of the cash outflows and cash inflows and the relationship between these two important or three important values that is that these are the three important elements of the cash flow stream.

First of all cash goes out, then cash start coming in and once the life of the project is over then we terminate the project and at that time we get something is that is a salvage value of the fixed assets and the working capital minded. Working capital is recoverable in the full amount. There is no salvage value that is recoverable at the book value of the project.

So, in the terminal value we have to be very careful, what we are going to recover in the form of the terminal value. We are going to get the salvage value back for the fixed assets. Because the plant, building, machinery other than land, plant, building and machinery we have purchased we use that, we provided the depreciation over the 10 years period of time.

But still their structure is there and if you sell that structure as a (())(8:35) trash even then it is going to get something back for us and that is called as a salvage value of that plant machinery and other fixed assets. Plus the working capital which we have the invested the funds in the working capital in the inventory, inventory if you sell in the market that is going to give you the full value.

Because we record the inventory at the cost of the market price whichever is lower, then you talk about your say credit sales. If some credit sales are made in the market whatever the book value of the credit sales is there we are going to recover them full, any cash is available with us.

So, working capital we should count for at the time of calculating the terminal value into its fullest extent as the equal to the book value in case of the fixed assets, we should take the salvage value. That is the total book value, purchase value minus the depreciation over the number of years.

And then, now the finally what the value is left up we are going to get this amount from the market that is called as the salvage value. So, these three important say considerations are to be borne in mind. Because these are the three important elements of the cash flow streams.

Now, next important thing here is for us time horizon of the projects, means for how many years we are going to estimate the cash flows. What is the foreseeable life of the project, what is the foreseeable life of the project? For how many say years because when we are talking about the cash flow estimation there has to be some period for which the cash flows can be estimated.

We know that cash outflow we are going to incur only in the current period or maybe till the, maybe the current period till the beginning or the till the end of the first year or till the end of the second year that we know that how much investment is required to be made. And how means much time it is going to take to build the project

But once it is commissioned and the production starts coming back to us means and we will start selling it in the market then the cash start flowing in back to the firm and that is called as a operating cash inflows.

So, operating cash inflows, operating cash inflows are going to be available back to the promoters or to the owners of the project for how many future years, future number of years, how many? So, here are the four important considerations either of the four considerations can be considered as, first here it is that is called as the physical life of the plant.

When you create a structure, when you create a plant, it has the minimum physical life or the maximum physical life after that you have to dismantle that plant and you either you have to replace that investment with the new investment means bring the new plant at the place of the

old plant or maybe terminate the project because now it has phased out. The production or the services coming out of it they have phased out.

So, it means physical life can be the one important consideration that once you have created the structure how long that structure is going to or that what is the life of the plant building machinery. After that if the product is there in the market and still we can manufacture and sell, again you have to make the fresh investment and replace the existing old structure with the new assets, with the new fixed assets or you have to dismantle it forever.

Because now the new things have come up in the market 10 years down the line and now this is not required. So, the maximum life of this project was 10 years, we used it for 10 years now it has to be closed down.

Second could be the basis of the working out the time horizon can be technological life of the plant. Physically plant is okay, it is still working, it is still working, but that technology has changed, but the technology has changed.

Now, I can give you a good example here, for example, when in 1991 steel sector was opened for the private sector participation, till 1991 when it was a closed economy 90 percent of the market was with the SAIL - Steel Authority of India Limited and some part of the market was being served by the TISCO Tata Iron & Steel Company.

So, because SAIL was the public sector company, why? Because they were working in a sector which was reserved only for the public sector. When the sector became open for the private sector participation and the private sector firms came up in big way in the steel sector or for the manufacturing of the steel.

We had firms like Jindal Steels, Jindal's created the Asia's first high-tech steel plant at Vijayanagar in Karnataka and Jindal Vijayanagar steel plant which was known later on as the JVSL was the Asia's first high-tech steel plant. Then we had Lloyd steel. We had SR steel in the western part of the country.

So, at that time now the situation became very peculiar for the sale. Because sale was operating in the market on the basis of the old plant machinery and old technology. And when the new this private-sector companies came up in the market they came up with the new technology.

So, now a firm manufacturing a product with the older technology has to compete with the firm's manufacturing the product with the new technology. So, you can understand that the product coming up with the new technology will be better in quality lesser in price. Whereas you cannot sell the same product which is manufactured based upon the old technology may be inferior in the quality and may be expensive in terms of the price.

So, at that time now means immediately after that SAIL was required to phase out the old technology and replace the old technology with the new technology. So it means the life of the plants of the SAIL was ended up at that time. When the new technology came up in the market and the private sector units manufacturing the steel came up with the new technology it necessitated that investment, new investment for SAIL also. So, it means you could say the time horizon for this kind of the projects is up to that technological life of anything.

For example, we talk about the IT systems software's. We buy one software today and we very quickly we have to recover the amount which we have invested to buy that software. Because we know that within 2, 3 years new software will come in the market. Similarly, in case with the hardware also, one computer is today after 2, 3 years a new computer with the new features, with the new storage capacity, with the new high capacity processors are coming up in the market.

So, it means one particular product has a life which is a technological life. So, if that is going to be the shorter than the physical life of the plant then certainly it will become the time horizon for estimating the cash flows.

Then is the, it could be other way around, next thing could be the product market life of the plant. Physical life is fine, product is physically doing well, technologically it is doing well but the product market life means the product of the means coming out of the plant is now has phased out, product coming out of the plant has now phased out.

There is no market for the product now or the market excusing or going down day-by-day and now there is no future of that kind of the production. So, automatically you have to find out while establishing one particular project that if we start manufacturing this product today how long it can stay in the market and what can be the product life cycle because every product has its life cycle.

And that product life cycle is largely means you can show it like this it is something like this. So, it is the initial inception stage, it is a growth stage, it is a saturation stage and it is a

decline stage, after some period of time this product start declining and this is a phase out. this product phase is out of the market.

For example, I tell you one product is say polythene bags, long back maybe 20-30 years back when this product came in the market this was considered as a welcome product. Even means you would be wondering at that time government was supporting the manufacturing of the polythene bags, unemployed youth were being given means liberal finances through district industry centres.

And they were being encouraged to establish the manufacturing of the polythene bags units. And because the plant capacity was very high so sometime it was not possible that whatever the production monthly or six monthly or annual production coming out of the plant is that is not sometimes saleable in the market by the owner of the unit.

So, even comment gave the facility that whatever you can manufacture and sell in the market you sell that and if any unsold amount is left we will purchase that from you all. Now, you look at, at that time 20 years back 25 years back we means used to welcome this product and this product was a preferred product polythene bags.

But today this product is nobody likes it, government is discouraging it. It has totally phased out, but still now the manufacturing is going on, sale is also going on. But now what is happening, now the product, life cycle of the means this product is on the last stage of its a cycle and it is on the say phasing out stage.

So, likewise whatever you will talk about any product whether it is a consumer product or the consumer durable, no earlier we had the refrigerators which were not frost free these days we have the frost free refrigerators. Talk about the air conditioners, air conditioners these days now there was a time of means say normal AC's, but these days we have the inverter AC's because of the power consumption means lower power consumption we have found out the inverter AC's, so new technology has come up in the market.

So, it can be the one basis that product market life because physically the plant is existing, is having a good life also, technologically also that it is good but the product coming out of it there is no demand for that product. So, automatically you would see that what is the time horizon can be one important consideration maybe the product market life.

And third, forth can be investment planning horizon of the firm, investment planning horizon normally there are some kind of the products which we can plan it like the short-term investment, medium-term investment, or the long-term investment.

We know, for example, we are going to have some say hydropower plant. We want to create hydropower project. We know that it is going to have a long term life, life term, it is going to be there sustained exist for the long term, or on the long-term basis. Similarly, if you talk about the steel plant certainly it will be for the long term.

Say petroleum refinery, certainly is a long term project. So, there you can see that cash flows can be estimated for the first initial 10 years, then for the next 10 years, then for the next 10 years that way you can plan the time horizon. There can be some products like some consumer products we are manufacturing, it can be a medium-term project and can very small.

For example you talked about say ice cream say manufacturing. So, if we are going to create it as a seasonal product. We are the life of that project is going to be how much? 6 months maximum, active life of that particular project is 6 months. So, that way also we can decide the planning, time horizon.

So, on the basis of the either of these 4 or some of these 4 means may be putting together 1 or 2 or 3 whichever is giving to you as the minimum time horizon whichever out of these four is going to give you the minimum time horizon that will become the basis of forecasting the cash flows. Minimum time horizon, physical life can be there, technological life can be there, but the product can be there in the market sustainable only for the 2 years.

So, that will become setting aside the other factors that will become the basis or the time horizon for forecasting the cash flows. We are going to create a petrochemical, petro refinery, petroleum refinery means very long time horizon. So, you can even forecast the cash flows for the next 20 years also.

So, whatever is we are going to work out time horizon has to be that minimum period of time which either of these factors are helping us to work out and for that period of time we will be estimating the cash flows.

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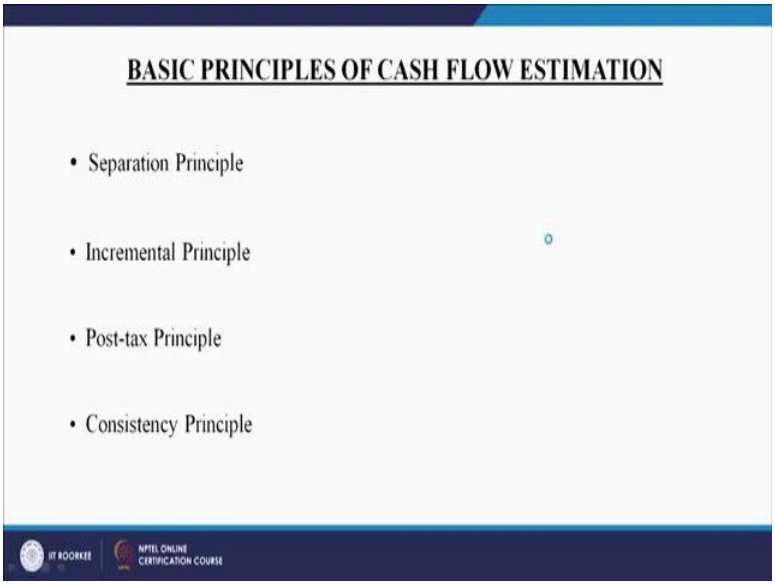

Now, in this case we will be talking about the say basic principles of the cash flow estimation, basic principles of the cash flows estimation and these are the four principles of the cash flow estimation, separation principle, incremental principle, post-tax principle and consistency principle.

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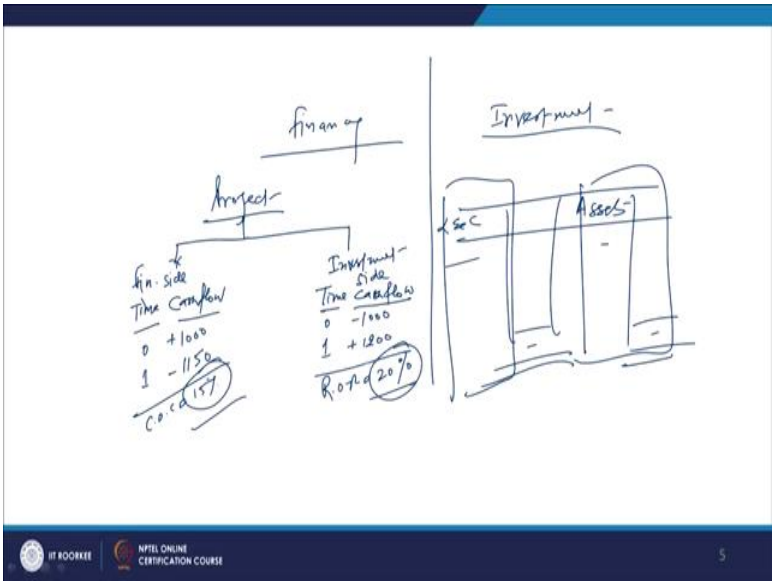

First one is a separation principle, when you talk about the separation principle. We have the two sides of this say project investment coin two sides. One side is called as the financing side or you call it as the one called as a financing side and another side is called as that investment other is called as the investment. And two are the different things different

components, two are the different components you cannot say that financing is same as investment and investment is same as financing.

In the balance sheet also if you for example when you create the balance sheet on the one side you have the liabilities and capital. And this side you have the assets at the end of the day both are same if you want to tally the balance sheet you can tally the balance sheet easily you can say.

So, it means this is one, this side is one, they are depending upon each other, they are complementary to each other but these are the two sides of the coin and while talking about the cash flow estimation also we have to consider them as the two different things. And the principle of the separation has to be applied here, principle of the separation has to be applied here.

So, when you talk about this principle of separation you can say take the help of this kind of the structure here. For example, what we are going to do here is we are going to create this project. This is the project, this is the project we are going to build up and we have two sides of this project, one is the financing side and other is the investment side, another is the investment side. Or you can say it is a balance sheet of the project, financing side and the investment side.

Now, if you talk about the say cash flows when you are talking about the cash flows here we have to take into consideration the time and second thing we have to take into consideration is the cash flow. Here it is also time and then we have to take here of the cash flow. These are the two important considerations in case of the financing side also. In case of the investment side also.

So, we will talk about here is financing. Because once we have taken the decision of going for the investment. Certainly we are now means going to go for the second decision of financing the project. Because investment decision is the first decision in the decision areas of finance first is comes up the investment decision and once that investment is okayed. Then we go for arranging for the funds how that investment will be financed that decision is called as the financing decision, that decision is called as the financing decision.

So, in this case time we are talking about here is the 0. In the 0 period we are for example we are going to talk about here is that the investment requirement of this project is say plus 1000. We require this 1000 rupees as per the investment requirement of this project we have

calculated here that if you want to go for this project you want to give shape this for this project you have to means arrange a sum of rupees 1000 maybe it is 1000, lakh, crore or whatever it is, 1000 is the requirement.

So, it means on some basis estimating the investment at the time of estimating the investment we have identified that some means investment will be required and that sum of the investment is 1000 rupees and how that will come, that may depend upon that the type of the different source is available. It may be equity finance, it may be debt finance, or it can be sum of both debt and equity finance. Should

o, normally when you talk about the project financing we consider both means the source is important for us. The equity is also important, debt is also important, so we assume that funds for any investment proposal will come from both the sources for the by way of equity also and by way of the debt also.

So, whatever it is from different sources we arrange 1000 rupees as the finance and this 1000 rupees in the 0 time itself is converted into the investment. So, this is called as the say investment because this is investment side so this is the plus 1000 cash coming in to us. And we are investing it into the business so it is minus 1000 because project and the owner are the two different entities, project and the owner are the two different entities.

So, the owner is arranging for the funds for meeting the investment requirement. So, first either firm is own resources first he will generate the cash and that cash in the form of financing will come in the firm and then that cash will be used for say giving shape to the project for buying of the fixed assets and then keeping some money for the current requirements in the form of the working capital.

Now this is the, and the time period of the project is only 1 year we are assuming time period of the project is only 1 year, so in the 0 period we are constructing the project and then we are now commissioning it and at the end of 1 year project is going to be terminated. Only 1 year's life, operation life of the project is only 1 year. And what is the cost of capital? We are assuming here as the cost of capital say 15 percent.

So, after 1 year in the first year what will happen because it is a life of the project is only 1 year. So, what will happen here, in this case now we are here at the year 1. In this we will use it and at the end of the first year what will happen? We will have to now say return this money so here is also a year 1, from this investment when this investment is made into the

business we had a cash outflow of the 1000 rupees. And at the end of the first year that is the last year also of the business operations we got a total cash flow of the 1200 rupees.

And since the cost of capital which we borrowed here to generate 1000 rupees is 15 percent, so we are going to pay the interest of 150 rupees 15 percent on this 150 rupees. So, now the cash which is going to be paid here is this is going to be minus 1150, this is going to be so we are assuming here is as cost of capital is 15 percent and here when you talk about is that is the rate of return is RoR. Rate of return is equal to how much? 20 percent.

So, this way you have to apply the separation principle, this way you have to apply the separation principle that whatever is the time that is important for us and during that period of time what is the construction period of the project, during which period the investment will be required, first you will arrange the funds so in the balance sheet it is a liability side. If it is own investment it is capital, if it is a borrowed fund it is liability and if it is a sum of the both then both are there.

So, it means separation means you keep the two things separate, first funds will come in then the funds will go out in the form of investment. So, 1000 is arranged coming in and then that is going out in the form of investment. So, plus sign became a minus sign when financing became investment.

After 1 year when we have to terminate the project we evaluated the whole thing that what we got, we will look it at first the investment side that by investing 1000 rupees we got the total year and cash flow of the 1200 rupees out of that we will pay back 1150 and the remaining amount will be available with us.

So, if you make a comparison of the investment and the financing side our cost of capital is 15 percent, our rate of return is 20 percent. So, it means we can say that on the basis of cash flow analysis and applying the separation principle we can save the cost of capital is lesser than the rate of return available from the project. It means we can think about going ahead with this kind of investment and we can means we are going to make a profitable investment or maybe a investment where the NPV will be positive.

Because ultimately the analysis depends upon or the acceptance or rejection decision will depend upon the cash flows of the project. So, cash outflow will be compared with the present value of the cash inflows and then we try to find out what is our cost of capital, what

is the rate of return available from the project and then we will be say making a comparison of the two and we see what is the NPV available.

So, separation principal means raises a point of question here that you keep the financing side separate, you keep the investment side separate and then you say that for financing of your total capital structure of the firm how much funds are required at what cost of capital these funds have been generated.

And while investing into the business how much in return is available and then you make a comparison of the cost of the funds with a rate of return available and take yes or no decision. So, clear-cut separation between financing and the investment.

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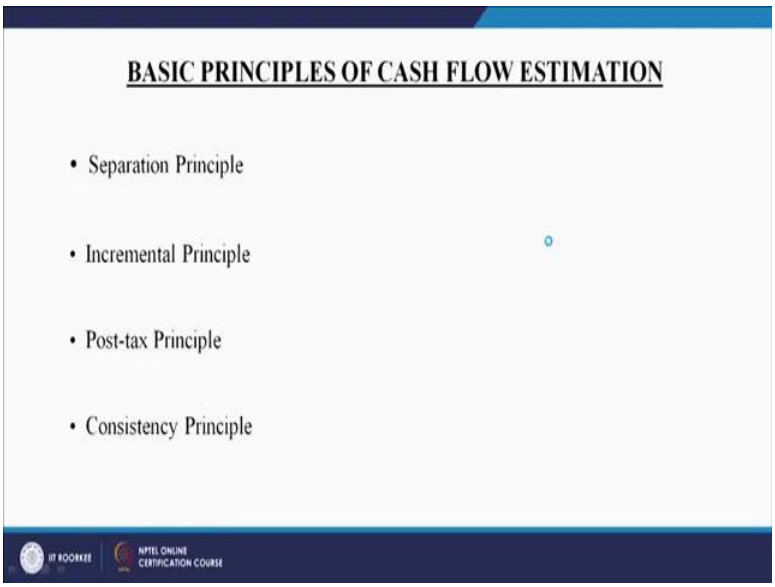

Second principle is a incremental principle, then is the post-tax principal and then is the consistency principle. Incremental principle I will just begin the discussion on it but I will detail discussion I will have in the next class. Incremental principle we assume is if and this is more important in case of a firm which is already existing.

This is not in case of their firm which is say not existing at all. If it is a start-up kind of a thing this principle will not apply. Incremental principle is the one only that when you are going to start a new project and the firm is already existing in the market.

A product a new product or a service to be launched by a firm which is existing in the market for exempt Reliance Industries are already there in the market and they moved into a new area of the business also that is that telecom mobile this telecom services. And they came out

with the new product or new service called as Jio mobile services under the name Jio. So, they came up. They introduced this service.

So, incremental principle says that we are existing firm and when we go for a new project, adding up a new product or a new service, how much value this new project is going to add into the existing value of the firm. Whether it is going to increase the value or is it going to erode the value, value erosion is going to be there or value addition is going to be there but that too on the incremental basis.

And when you talk about the incremental basis here why we are talking about the incremental basis because when you are going to add the value it is going to affect the existing performance of the existing projects also, some effects are positive which are called as a synergetic effects and some effects will be negative loss of the sale of the existing product or maybe a pressure on the say existing plant and machinery or extra overheads to be say paid to means to sustain the new product or the new service.

So, both negative and positive effects will be there but when you talk about here this principle if the firm is existing and they want to introduce a new product or service in the market then we will have to evaluate the cash flows in terms of incremental principle, because new funds will go out, funds will also come in and that inflow and outflow of the cash will have some effect incidental effect upon the existing projects of the firm also.

So, how this entire process has to be taken into account that plus the other important two principles post-tax principle and consistency principle I will discuss with you in the next class. Till then, thank you very much.