Project Management for Managers
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Lecture - 28
Abandonment Analysis

Hello everyone. I welcome you all in this session. So far we have discussed several techniques of analyzing risk in a particular project, and let us look at something called Abandonment Analysis- this is another technique of assessing risk in a project. What happens? Whenever you start a project you think that everything would go as per your plans, but generally most of the times things do not work as you plan.

So, let us say there is a project which has got a life of 10 years, but due to some reason you do not reach up to up to 10th year and you end project in between, and this is known as Abandonment Analysis right. So, when you complete the project or when you end the project before its useful life it is known as abandonment of a project. And this is a very important decision whether you should abandon a project or not or you should continue that project even if it is going under loss.

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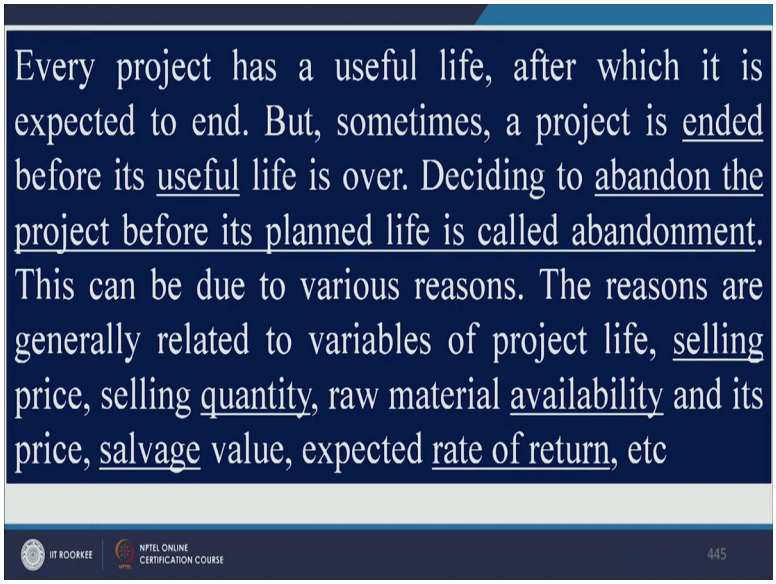

So, a call has to be taken and there might be several reasons for abandoning a project, and there are n numbers of reasons possible we will look at couple of those reasons.

You may abandon a project because of selling price selling quantity, something is wrong with selling quantity or something is wrong with the selling price of the projector or a product, raw material availability or non availability of raw material and its price, salvage value expected rate of return these are couple of reasons for abandoning a project.

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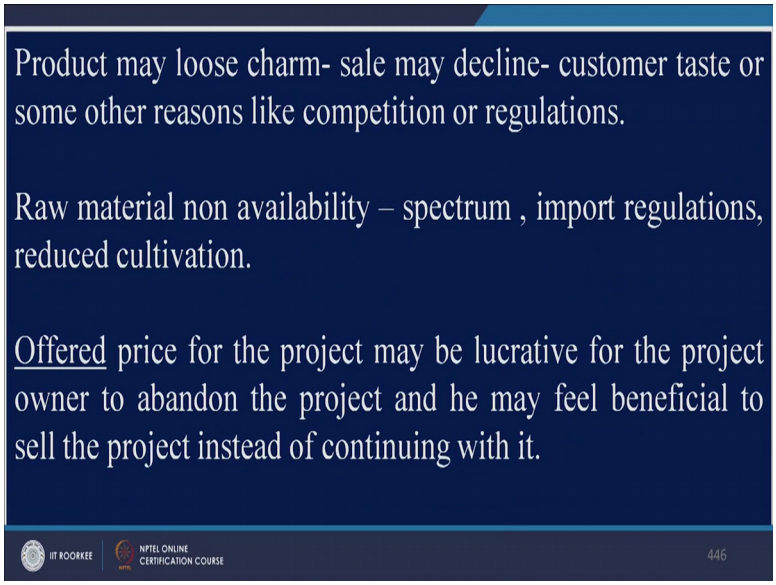

Let us look at couple of other reasons let us say you have come up with a new product and you are doing fine let us say in first 2 years, but after 2 years sales may start declining now this could be due to a new product in the in the market of your competitor or it could be due to let us say government regulation. So, there will not be any charm for your product in market after 2 years. And in that case you will have to abandon that particular project or product many times you might have to abandon project, because of non availability of resources namely let us say a raw material resource.

So, let us say if you are in the business of mining and if government come comes up with new mining policies then you will have to stop your project isn't it. Let us say if you are in into telecom business and suppose government does not give you more spectrum then you will have to abandon your project existing project or if you will have to cancel your expansion plans let us say if you are getting raw material from abroad and government suddenly increases import duty then it would be very difficult for you to survive and you might have to abandon the project let us say if you are if you are in a in a project which

is based on agricultural products and due to let us say failure of monsoon there is reduced cultivation then you will have to abandon your project many times you do abandon project because offered price is very high.

So, it is good to abandon project right because offer price is very high is. So, there is no need to continue with existing project in you just sell your project to someone else and you start your new projects. So, this could be another reason for abandoning a project right an increased in expected return is also a reason for abandoning a project let us say you have started a project and you have expected that the project would give you 12 percent return right you.

So, your plan is to get 12 percent return, but project is now giving you returns at the rate of 4teen percent more than your expectations. Now in this case due to economic conditions like increase in interest rate you would like to get some more returns which you want you want return at the rate of 16 percent. So, though the project is giving you 4teen percent, but because of increase in interest rate you want more expected returns. So, in this case also you will have to abandon the project.

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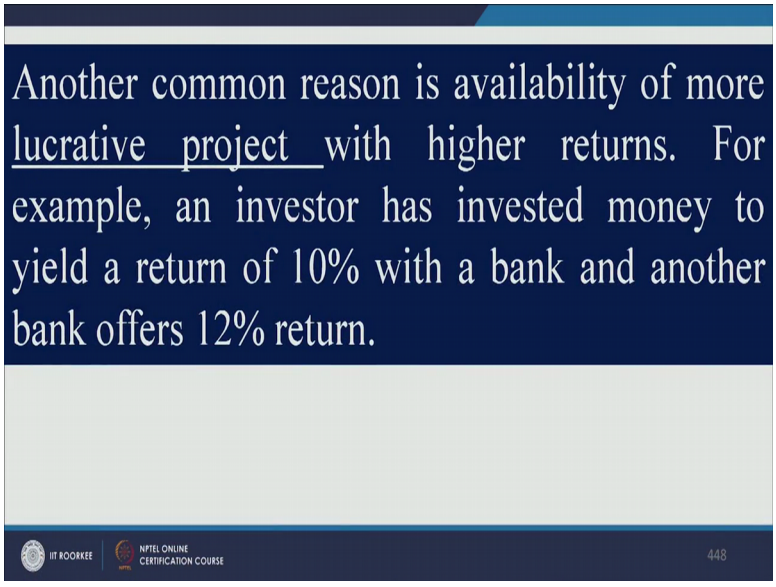

Another common reason is availability of more lucrative project let us say you are selling a particular product and you think that you are your other products are doing better. So, you would try to you will stop this particular product and you will focus more on some other products. In that case also you may abandon a project let us say for

example, an investor has invested money and that is yielding 10 percent interest in with a particular bank, but if you get an offer of let us say more than 10 percent it is good to abandon the first offer. So, these couple of examples of abandoning a project.

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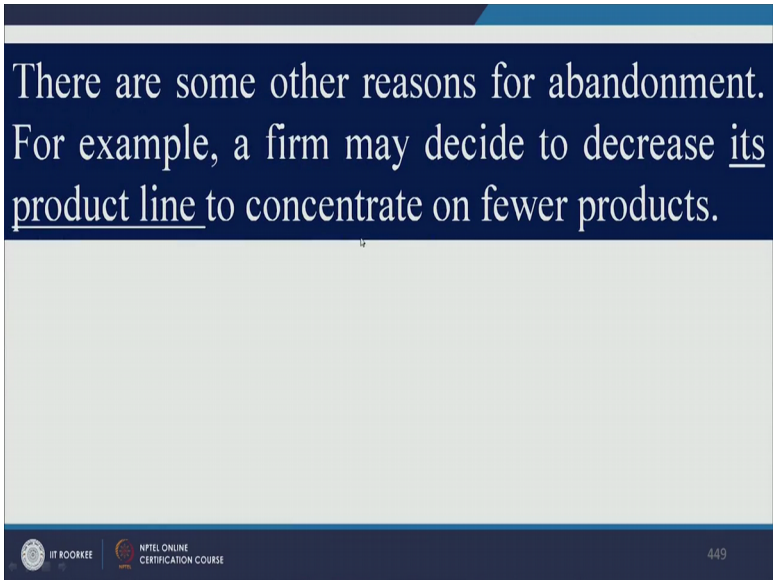

But the most important question in all these is when to abandon. Let us say this is one more example of abandoning a project, a firm, decide to decrease its product line to concentrate on few your products. So, in that case you will have to abandon project.

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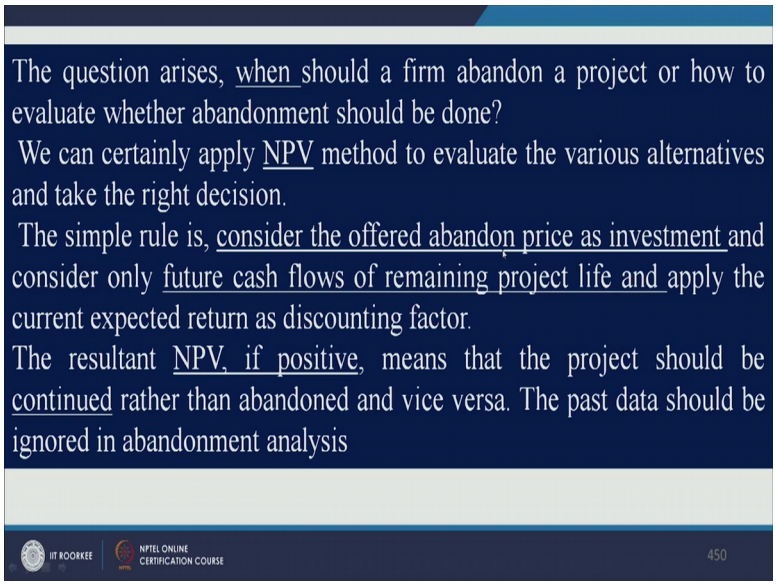

So, in all these situations the most important decision which you need to take is should you abandon a project or not if you should abandon a project then at what time. So, first question is should you abandon if yes then when right 2 important questions.

So, we can solve we can answer we can get answers to those 2 questions by calculating NPV right. So, NPV can be applied to evaluate various alternatives to take a right decision now what we do when we calculate NPV the simple rule we will follow is we consider the offered abandon price as investment and consider only future cash flows of remaining project life and apply the current expected return as discounting factor.

So, let us say a life of a project is 10 years after 5 years I have got an offer. So, I should treat that offer price as investment and I should consider cash flows after 5 years which I would be receiving right. So, if you if my NPV is positive then I should continue with the project otherwise I should abandon that particular project right. So, we will work out an example on abandon analysis and then we will wind up this particular session.

So, the question is like this there is a project whose life is 7 years and the initial investment is 600 lakh.

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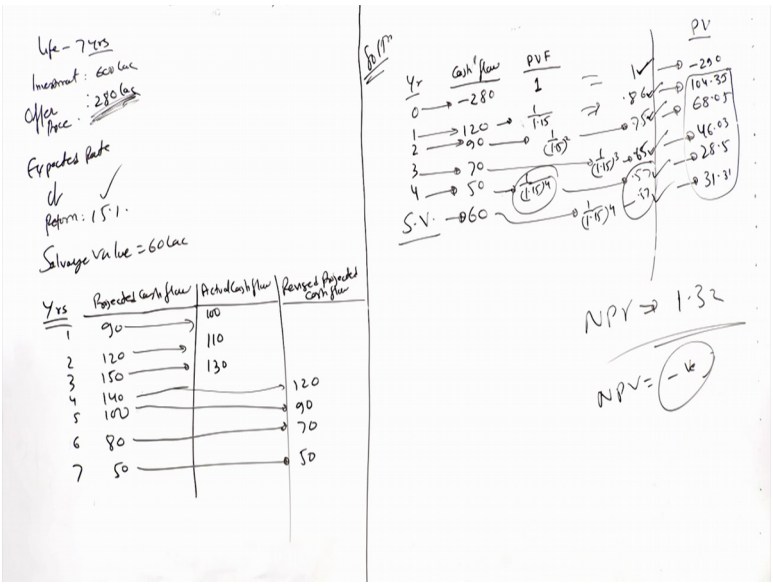

So, life of the project is 7 years and initial investment is 600 lakh right after 3 years you have got an offer from a person who is ready to give you 280 lakh rupees of that particular project this is your offer price offer price and the expected rate of return is 15

percent. So, expected rate of return rate of return is 15 percent right expected salvage value is 60 lakh salvage value 60 lakh rupees at the end of seventh year, but you have got an offer at the end of third year itself and this is the offer price. And there are some other information as for as this particular project is concerned. Let me write down those things.

So, as I said the life of the project is 7 years. So, let us say it is 1 2 3 4 5 6 and 7 projected cash flow projected cash flow in first year 90, then 120, 150, 140, 180 and 50 this is your projected cash flow in next 7 years, but you have received some other cash flow and the actual cash flow is this. So, actual cash flow in first year is 100, second year 110 and third year 130.

So, first year more than expected second year less than expected third year less than expected right. So, at this particular point you have received an offer to sell this project at this cost at this price right. So, if you sell this project at this price should you go for this option? That is the question. So, this is actual cash flow now the revised projected cash flows are revised projected cash flow at the end of third year are now let us say this 120. So, here this is 120 in fifth year, this 90, 70 and 50.

Now, you are at the end of third year what decision will you take will you abandon this project or will you continue given that rate of expected rate of return is 15 percent are discounting factor is 15 percent what you should do. So, to solve question like this you need to calculate NPV of this particular project if it is positive you should continue otherwise you should stop this particular project right. So, as we have seen that in abundant analysis we treat offer price as investment.

And we take only the newest the projected cash flow after third year right. So, let us solve this question. So, year 0 1 2 3 4 then this is your cash flow cash flow as I said this is your offer price and this is to be treated as investment. So, this is minus 280, isn't it? And then this would be the first year right. So, 120 then 90 for this year for third year 70 and for 4th year 50 and you will also have salvage value which 60 this is nothing but salvage value.

Salvage value at the end of seventh year right now you need to find out present value factor. So, present value factor initially would be one right and then it would be 1 upon 1 upon 1.15. This 15 percent then 1 upon 1.1 is square right for this square. So, for this 1

upon 1.15 cube for this 1 upon 1.15 to the power 4 right and for this also it will be same right for this also 1 upon 1.15 to the power 4.

So, present value factor is now here it is one then this is 0.86 then for third for this it is 0.75, 0.75; this is 0.57, 0.86, 0.75 point; this 1 2 3 4 this 0.57 and for this also 0.7 right. So, you just multiply these cash flows with present value factor. So, this is this 0.75 this is 0.65 for second year it is point this 0.65 for this 0.65 for this 0.57 and for this also 0.5. So, for the last 2 for 4th year and for salvage value discount factor is 0.57 for this one for third year this s 0.65 for second year 0.75 for first year 0.75.

I have to check this anyway this is not a difficult job you just take 1 upon 1.15 next time is square then cube and then to the power 4 right. So, you will have 5 values total including this total 6 this is first, second, third, fourth, fifth, and sixth this is correct, now multiply cash flow with present value factor. So, initially it is minus 280 into 1 right. So, this is present value. So, this minus 280 right then you have got 104.35 then 68.05 then 46.03 then 28.5; 31.31 and when you add these all these values we just add all these values and subtract this value you will get INPV as 1.32. So, this is a positive NPV. So, you should take a decision. So, the abandon this project or not you should not abandon this project because NPV is positive.

So, till what let us say if I change this question if I make this as let us say 290 then what will happen NPV would be negative some negative value here isn't it. In that case you need to abandon this particular project right. So, in this way you can do abundant analysis let me repeat what we have done in this session before summarizing this.

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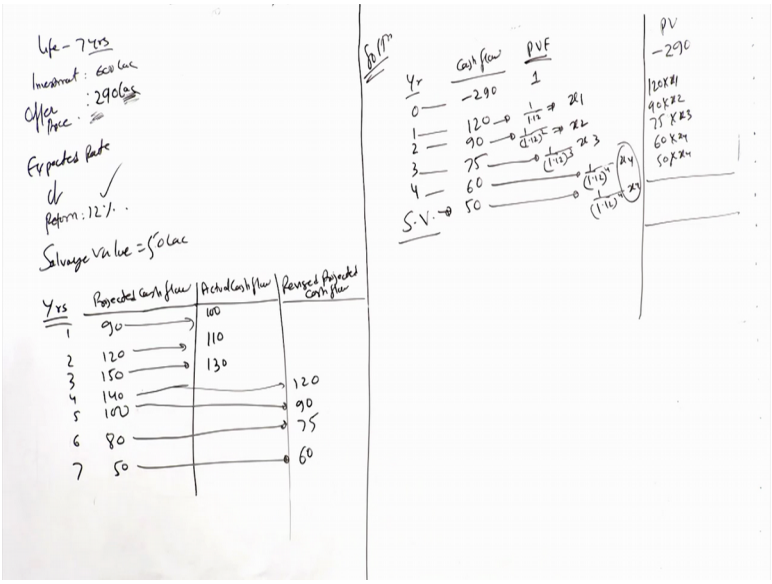

Let us take one more example of abundant analysis. So, what will happen if I let us say if I change this to 290 and let me also change this value to 12 percent, let us see what happens right.

So, how things will change all the values which are over here these values will change. So, what is now cash flow cash flow is minus 290 right let me also change this to 60 and this to 75. So, cash flow is now 120, 90, 75, 60 and I have changed. Let me change this also salvage value is 50. Now what calculate resent value factor for this one what would be present value factor for this 1 upon 1.12 right for this 1 upon 1.12 square right for this 1 upon 1 2 cube for this 1 upon 1.2 to the power 4 and for this also 1 upon 1.12 to the power 4.

So, you just calculate these values and then find out present value present value for first case it would be 2.9. So, we will calculate all these values using calculator. So, 1 upon 1.2 is 0.86 I think you need to calculate let us for simplicity take this as X 1 X 2 X 3 X 4 and X 4 right this will same. So, 120 into X 1 plus 90 into X 2 plus 75 into 75 into X 3 plus 60 into X 4 plus 50 into X 4 right just take summation of all these values and find out whether NPV is positive or negative.

If it is positive I hope that in this particular question NPV should be negative you will have to calculate it right. So, if it is negative abandon the project. So, let me summarize what we have done in this session. So, abandon analysis is other tool to find out risk in a

project and when we complete the project when we end the project before its useful life is known as abandon analysis and there are multiple reasons for that sometimes external reason sometimes internal reasons external reasons maybe, let us say a government related are let us say a new competitor coming into picture a let us say some new technology has come into the market let us say some natural disaster has taken place or any other external factor. And we have seen external factor as pestle analysis pestle analysis. It is political reason or economic reason or social reason or technological reason or legal reason or environment reason.

So, these are external factors and you can have internal factors also internal factors may be let us say if it is a joint project between 2 companies and something has gone wrong between 2 companies then project will have to be end at that point itself right or let us say the key person of the project has been left the job. So, in that situation also you will have to abandon the project the other internal reasons can be several things.

Let us say machine is troubling a lot there is a lot of maintenance cost there. There is high absenteeism in the plant and you do not have many times let us say skilled workers in your company and you can come up with several internal factors and sometimes the project may fail because of combination of internal and external factors and you need to look at all those factors carefully before abandoning your project.

So, in standalone risk management techniques we have seen methods like sensitivity analysis in sensitivity analysis what we did we did change one of the input variables and we saw the effect of that change on output right. So, this was sensitivity analysis the other one was scenario analysis scenario analysis is better is a better method when sensitivity analysis, because we can change more than one input variables and we can we can see the effect of those changes on output and we have seen scenario analysis that you can have optimistic scenario you can have pessimistic scenario or you can have normal scenario, but in real life you do not get all these 3 right you will always have a combination of these 3 right you cannot say that this pessimistic and this optimistic you will always have a combination of all these 3.

We have also seen break even analysis in breakeven analysis we have seen break breakeven analysis is method wherein your total cost becomes equal to total revenue right. So, it is a point of no profit no loss and we have also seen Hillier's model of risk

management where we did calculate mean and standard deviation in terms of NPV of a project and then using probabilistic analysis we did solved couple of questions. So, in Hillier's model we have seen what would be the let us say a probability that the project would an NPV of let us say 30 lakh even that the mean is 20 and standard deviation 5 right.

So, in breakeven analysis and in Hillier's model we have seen these things and in decision tree analysis you have seen how to take sequential decisions right because when you take a decision today it will have long term effects and you should try to know; what are the possible long term effects on your project.

So, you should you should prepare decision tree very carefully, and then calculate expected monetary value at different notes and keep on you know truncating those alternatives which do not give fruitful results are which give you inferior results. And apart from these things we have seen mean standard deviation semi variance and coefficient of covariance these techniques in this particular in this particular topic which is which is on standalone; standalone risk analysis.

So, with these things let me end this particular session. In next session we will take up a new topic.

Thank you very much.