Financial Management for Managers

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Lecture-40

Risk Analysis in Capital Budgeting Part I

Welcome all. So, now we are going to start the next part of discussion or a new topic or the next topic that is the Risk Analysis in the Capital Budgeting projects. So, till now we have seen that the capital budgeting process how it is important in the new investment say process or new investment proposals.

And we have seen that once we have got the cash flows both cash outflows and cash inflows then we discount that and try to find out that if it is a discounted criteria then we compare the NPV in case of the net present value method with the say miss we try to calculate the NPV and there we calculate the present value of the cash outflows and compare that with the present value of cash inflows.

And an NPV that the, minimum NPV should be 0. If it is positive that it is very good, that is the selection criteria or rejection criteria of a project or sometime we follow the internal rate of return or the third discounted criteria we followed was the benefit cost ratio. And then we could see some non-discounted criteria also. So, that was in the capital budgeting process means the say evaluation of the investment proposals whether we should make investment into any project or not.

And then we moved forward with the next part that was the estimation of the cash flows, because cash flows under the capital budgeting were given to us, but how to estimate those cash flows we learnt after that. And now we are going to miss a same way connected to the capital budgeting process, we are going to learn about the third thing which is the third important thing about the evaluation of the capital investment proposals and that is the risk analysis of the capital budgeting proposals or risk analysis in the capital budgeting proposals.

So, because when we are talking about the new investment we want to make or the any capital investment we want to make in the new projects. So, because we are when we have planning to make investment and when we will actually make an investment there is a difference in the time gap. And that difference in the time gap creates so many problems, because when you are planning to make investment then we are in the abstract form and when we are actually going for making investment then we really means find out or realized that what things are going to take place in the market or how the things are going to happen in the market.

Similarly, when we say plan for a new investment we estimate the cash flows, we estimate the cash flows that how much cash out flow is expected that how much investment is expected to be made, how much cash inflows are expected from the project over the period of time over the subsequent years.

And then we try to say calculate the NPV or IRR or the benefit cost ratio and at the same time the payback period. What say what about that what about the cash flows we are estimating at the time of preferring the DPFR or evaluating the capitally investment proposal, if those cash flows do not hold good or do not come true in the say at the time when we really make the investment in the market, so it means there will be a element of the risk involved in this investment proposal.

It may be possible that whatever the investment we are planning to make in the say in the beginning or at the time of planning for that capital investment we had anticipated some amounts some given amount, but actually when we started making investment, so there was no end of the cash outflow and means building the project, we thought the some 1 million rupees will be required, but actually it cross the 2 million rupees.

So, it means the whole estimate will get disturbed, because whatever the cash inflow now we are analysing and comparing and calculating NPV is that is related to the cash outflow. So, if the cash outflow has become now double, then the estimated amount or expected amount, so in that case what will happen? Means your cash inflow should also change at the same proportion or in the same ratio.

But it may be possible that cash outflow has increased and has become double but the cash inflow is not changing in the same process, of the other way round you can see there element of risk maybe because of the cash outflow is same that whatever we have anticipated some you can call it as some 10, 15 percent of the difference was there, which is we have kept the provision for the continence’s, but the inflows have got negatively hit, means whatever we plan to receive at the end of the first year, that much of the inflow we have not received.

Because inflow depend upon the revenue and revenue depends upon the sells of the product of the service, we are going to generate out of this project. So, for example whatever the anticipated demand was there in the market we could not get that much in the response in the first year. Similarly, in the second year, third year or the in the other years, so the revenue because of the sells has fallen down and whatever we anticipated that will be selling this much of units in the market.

Or this much of the market share will be able to grab from the total market or maybe snatch from our existing players in the market that has not happened or even if the project is product is new in the market for the first time we are introducing. So, in that case we had planned that we will amaze make a big difference in the market, but people rejected the product, people rejected the service, so in that case it may be possible that whatever the cash inflows we are anticipating they are not up to that mark.

So, cash outflow already has occurred, but the cash inflow is not up to the mark and whatever the NPV, because all your capital budgeting process or the evaluation of the new investment proposal that all depends upon means your NPV we are calculating will be, for example, we have found out that NPV from the project propose project is going to be quite positive, but it will be positive only if the anticipated cash outflow and inflow say take places, or are means coming out of the project in the same estimated amount.

But if any of the amount is disturbed sometime the cash outflow is more sometime the cash inflow is lesser then the expectations or sometime both get disturbed, sometime both get disturbed that cash outflow we had anticipated is 1 million rupees, but cash outflow we had anticipated as 1 million rupees, but it has become say or gone up to 2 million rupees. And cash inflow we were expecting that on an average in the beginning of the sorry, at the end of the first year we will getting some 200,000 rupees then it will grow to 400,000 rupees then to 600,000 rupees but it is not growing because the market has not responded like that.

So, when I was talking to in the beginning of discussion about the Anchor who fruit beer project, it happened the same thing there, there company anticipated that the cash outflow is expected to be 300 or 350 crores and they were ready to make investment. But when the product came to the market, the when the product came to the market that was reject by the people, that was not appreciated by the people, was not accepted by the people.

So, what happened cash outflow happened as per the anticipations, but cash inflows did not come back as per the anticipation or as anticipated. So, what happened? There was a mismatch and when there is a miss match how long you can sustain the project means in anticipations that though the cash inflows are not up to mark say first 1 or 2 years, but over a period of time they will improve. How can you means expect like that?

So, it may be possible that we have to close down the say this manufacturing facility or may be this process. We have to close down this entire project, so it may be possible any kind of things may be possible any kind of thing may happen. So, means wherever we are estimating for anything, we are planning for anything ultimately planning is planning, ultimately anticipations is anticipations, ultimately estimation of the cash flows is only estimation.

It is not actual process or it is not the case actually has it has happened in the market. So, in that case for example if we are not sure about the success of the product of the service, so we should move forward in the market the way Karsanbhai moved while manufacturing the Nirma washing powder for the first time in 1982 he did not miss, though he knew it that it is going to a product people may expect it or people may have a very good response.

But still he did not go for the large scale production right from the beginning, he started the process means manufacturing at a very small level he distributed to his neighbours free of cost, then he distributed to his relatives free of cost. And when he saw the response is very good people are liking the product, people are excepting the product then he started means making the commercial production and then gradually he increased the scale, gradually he say upscale the production.

So, that kind be the one strategy, that can be the one possibility that yes you can, not take the risk or you should not take risk that immediately you make a big investment huge investment and then you say anticipate that the performance will be this much and we will have this much of the response from the market. Because in that case if the response is not up to the mark then whole investment is expected to go down in the drain.

So, we have to be very careful means, what is the point of discussing this particular thing here risk analysis in the capital budgeting is that we should be very careful, we should be very particular while deciding or looking for the investment in the new proposals and risk element is always present there. So, we should try to keep that risk factor in mind, so that if that risk means affects are firm negatively, then it is anticipated and we have already known that if the element of the risk is this much we will have the control measures.

We will means say take care of the risk or we will say look for the new market or we will add some new feature in the product or we will reduce the price, so that way we will have to means go for finding out or making some strategies in the beginning. So, if you are making the investment like what the Anchor did investing 350 crores in the fruit beer project and finally it ended up as a failed proposition. So, ultimately means it is going to only create a create a big loss and you can call it as a disaster to the existing firm.

And may be the existing say reserves and surpluses if there is any they may be totally depleted and even the existing shareholder even the existing owners and promoter of the existing firm they may put them self into the risk. So, we have to means analysis the capital budgeting proposals from this angle also and careful risk analysis has to be done. Careful analysis has to be done, so that whatever is expected to happen that is largely known to us in advanced and we are prepared to take care of that, we are prepare to take care of that.

So, because of any reason the things may change, because of any say factor which is not even anticipated the things may become negative or the estimates may become negative. So, we have to be very careful and we have to take the corrective actions, means we have to propose that if any wrong thing happens, but for corrective actions we can take. So, this all we are going to discuss now in the next say a few classes about the risk analysis in the capital budgeting processes or the capital budgeting proposals.

So, that if anything wrong happens in the market or if negative factors effects our project or the investment this proposal then the corrective action which we already have kept in mind will be taken. So, when you talk about the risk analysis in the capital budgeting proposals, we will have to discuss so many things with regard to this and the things which we are going to discuss now in the next say a few class, they are these important points we are going to talk about. First we are going to learn about is sources and the perspective of the risk from where there is risk expected and if the risk take place how to deal with that risk.

This is in the first part and then different methods of say you can call it as taking care of the risk or may be anticipating the risk. And how much risk can be there? And if any risk factor affects the project or the project proposal negatively what corrective action we can take in? So, different methods are there we will be learning about all these methods. Say to the extend we can learn, different methods are like sensitivity analysis is there, scenario analysis is there, break even analysis is there some other models are there, specific models are there like Hillier's models is there, simulation analysis, decision tree analysis and then we will go for the corporate risk analysis.

And then we will learn about how to manage the risk, if risk happens and means risk takes place how to manage the risk. And then we will lean about is the project selection under the risk that how to go for the project section under risk. And the risk analysis techniques in a practice in India largely that in the Indian industry or in the Indian industrial scenario if any kind of the risk takes place how to manage that risk or how to means say analysis at first and then later on manage that risk .

So, all these things we are going to learn one by one and means once we complete the discussion on the risk analysis of the capital budgeting proposals we should be clear about that if there is any kind of the say factor or any kind of the situations happen which are totally unanticipated then how to deal with that? And how to save the project or that total investment proposal from getting negatively affect or getting negatively hit.

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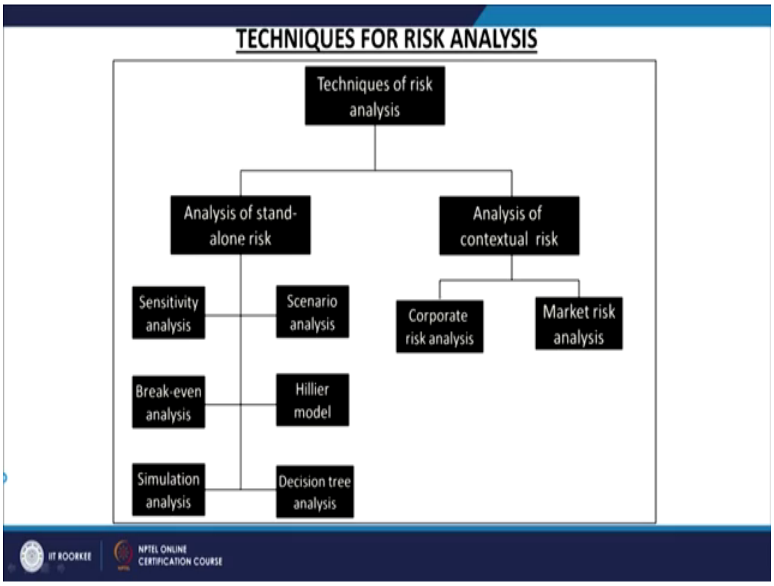

So, now we will move to the say next part that is learning about the technique for say risk analysis. Techniques for the Risk Analysis or methods of the Risk Analysis that how to deal with the risk, if risk factor affects the firm or risk takes place in the firm, how to take care of that, how to deal with that.

When you talk about the Technique of the risk analysis, you have say largely 2 kind of the techniques broughtly 2 kind of the techniques given here, 1 is the analysis the analysis of the stand-alone risk analysis of stand-alone risk and second is the analysis of the contextual risk. When you talk about the stand alone risk analysis it means here we walk about the only project in question the proposal which we are going to means the take care of now or we are going to means make a new investment.

See, when you talk about the new investment proposals largely you can divide it into 3 broad categories it can be the RND for the existing firms I am talking about, for the existing firms, if they want means go for the new investment say process, it can be either the RND proposal risk and develop, sorry, research and development or it could be the say expansion of the extending facilities or third it could be the replacement of the some existing asset with the new asset.

So, this kind of the projects can be undertaken by the existing forms. So, for example there is a pharmaceutical company, they are manufacturing number of drugs already but they want to say find out a new molecule, new drug for securing another or may be a disease which is there in the market commonly there in the market for example very effective drugs are not there to cure the dengue fever or the dengue problem in the market, people are getting affected because of the mosquitos.

So, if you want to find out any company may be Sun Pharma or may be the Ranbaxy or may be the Radeus laboratories, these existing companies. If they thing of that ok let us try to find out a new molecule for curing this particular disease or this particular problem or different kind of the fevers are there, people are getting affected children's are getting affected and sometime this common drugs are not working on that.

So, there is a problem identified and for say looking for the solution for that problem or that disease that new drug company say planned to find out. So it means new drug means finding out the new molecule, once that molecule is found out then the drug that can be as that can be converted into a drug by means processing that. So, RND projects are consider to be most risky, maximum risk involved is there in the RND projects whether it is the pharmaceutical industry or whether it is any industry in the manufacturing sector.

When we start looking for say any product to be manufactured and say we start or initiate the RND process and when we end it up and when we look back that how complex and tedious the journey entire journey was. So, in that entire process huge investment is required to be made and at the end of the day we not know whether we will be able to find something or not. If we are able to find out something then fine that we will be able to recover the whole investment, but if we are not able to find anything then you can see that entire investment go done in the drain.

So, as I told you sometime in the previous class also that as per some estimates in the Indian market or as per the Indian conditions or the Indian pharmaceutical industry say identifying or means getting a new molecule, identifying or finding out a new molecule a new drug I can say for treatment of any disease takes minimum 10 years a period time, time period, minimum period of time is required that is 10 years investment in terms of time is required.

And minimum 10,000 crores of investment, even 10,000 crores of investment is old estimate. It has further gone up to, but even you assume that even today also it is 10,000 crores, so it is a very big amount. So, if we spend 10 years period and we spend that 10,000 crores also, but if we are not able to find out that molecule you can understand how much risk we are going to take. But you have to take risk, because without taking any kind of risk you cannot means think of means having any break through.

So, RND projects are the most risky projects. We have to go for very careful analysis and then to start the project. Second means the next less risky is the expansion projects say for example we are manufacturing the say some 4 – 5 products, we want to add up 1 more product and it may be possible that product is not acceptable to the people we lost the total investment in the market. What happened to Anchor that was the case that they were into the electrical product segment, but when they thought of introducing a new product in the market that is fruit beer that was rejected by the people.

And after that it could be the replacement of the asset. So, if you move into the hierarchy of the risk RND is the say the most risky investment proposal, then is the expansion proposal and then the least risky is the replacement of the asset proposal. Because there we know that, we are going to replace the old machine with the new machine though the investment requirements are very high.

But revenue growth will also be very high cost will come down, quality of the production will improve and automatically it is going to be a win-win situation for all of us or for all the stakeholder of the company. So, this is about the existing firms, but the risk for the new firms, new entrepreneurs is very high. For example some person who has recently graduated or done MBA or may be a B.Tech or may be any other degree.

And he decides that no he will not go for the placement, he will not look for the placement in any company but rather he like to become a entrepreneur. He must be a very good idea in mind and even the venture capitalist also came forward to get the funding and that the project was given the shape and product, the service started coming out in the market. But somehow the product failed or the service failed and the entire firm all the efforts have to be say close down.

So, it means huge amount of the risk is involved for the new entrepreneurs also for the start-up also, but because of this risk or existence of the element of the risk you cannot stop the business activities any way you have to look forward you have to grow. So, it means the point of caution here is that you go for the business, you go for the new investment opportunities, you go for the new investment proposals, but be careful and make a proper risk analysis before making any kind of the investment in the market practically.

So, what are the techniques available? That is for the new project, means individually for the new projects means before started starting making out the investment in the market we will have to, we will have to make a proper risk analysis for that different techniques are there. And these techniques ae very commonly means available in the market and we can learn here and then any one amongst you want to apply them in their own organizations while say selecting the new projects you can make use of these techniques.

So, first technique is like sensitivity analysis, then is the scenario analysis then is the break-even analysis, then is the Hillier's model, simulation analysis and decision tree analysis. So, these techniques are there to look for or to try to find out the risk involved in the project which is been seen as a stand-alone facility that only to a new investment proposal. We are not means comparing it with existing products of the firm or the existing business processes of the firm who is going to propose the new investment proposal.

Or we are not going to means look for anything, we are only trying to find out that the firm maybe existing firm they are going to have only this project they do not have anything in the past. There are not doing any kind of the business, this is the first project and if we make this much of investment as required as per the DPFR, then and we are expecting this much of the cash inflows over a next 5 to 10 years foreseeable period. So, it means if this much investment we are going to make this much of the cash flows we are expecting, so any kind of the fluctuations are going to affect that project or not?

Our estimates in terms of cash outflow and cash inflow are they means, the correct and you can consider they are the nearer to the true or correct estimates, if they are not then we have to take the corrective actions. So, that if we are anticipating what kind of the problems are going to take place it may be possible there sales we are anticipating per annum, they may not be, means they are not able to attain those level of sales in the beginning of the year. So, it means if sells are getting affected everything else will get affect, means your profit will become a loss and if the loss is there then there will be the negative cash flow.

Similarly, we are anticipating out the variable cost, we thought that the raw material will be available at this much of the price in the market, but if you do not means anticipate then you can you can means end upping the very high price for the raw material. So, what will happen? The cost of production will go up in the market and either you have to recover that increase cost of production from the market by jacking up the selling price or if you are not able to jack up the selling price, you end up making the loss.

So, in many cases you have to be very-very careful, I give you a example here, for example, the products which are based upon the agriculture products, maybe the companies who establish the say new projects or the new investment they make in the market, establishing the new units, new industries or new firms, when they create or the new products which they add up. If they are based upon the agriculture products, maybe the agriculture products are been used as a raw material.

So, a many a time when we estimate the price of the raw material per quintal, per kg or per turn that this much will be the price we will be paying to buy the raw material from the market and then we will be processing that raw material and converting into the finished product. So, we maybe estimating a price which will be payable at the time of the harvesting season, if you buy the raw material in bulk and that to in the harvesting season then it may be possible that you get the product that input at a very-very reasonable price.

Now, for example, some entrepreneur thought about establishing a mustard oil manufacturing unit, it is a very simple unit, you have to have one or two expellers, you have to have the say cotton seed, you have to crash those seeds and then you have to means say have the main product that is oil mustard oil that will be produced out of this process. And then the by product will be the oil cakes which will be available and they can be used for manufacturing the cattle feed.

So, if we have means a planning that we are going to establish this unit and we are going to manufacture the mustard oil, so manufacturing the mustard oil you need the mustard seed and mustard seed price is different. When you buy the mustard seed from the market at the time of harvesting of the mustard seed and that to in the say markets or the mandis, which are known for say the mustard seed you go to Rajasthan you go to some parts of Haryana or some parts of Punjab or even MP were the mustard seed is grown.

So, if you go at the time of the season and then you directly contacted with the farmers and you as a first hand buyer without any kind of the middleman you buy their seed in bulk, so you will paying you will be paying the different price. But if you plan to buy it later on from the mandis or from the markets, now who have purchased and stored it, then the price is going to be totally different. So, in that case even a say expected or proposed or anticipated profit making mustard oil manufacturing unit may turn into the loss making say mustard oil manufacturing unit, because cost of the raw material we had anticipated was totally different.

Now, what we are paying here is totally different. So, must have seen that all this companies who manufacture the products which are based upon the agriculture material like Parle’s, like ITC, like your even to some extend the say Hindustan Unilever, who are manufacturing this say wheat flour or may be the biscuits or may be the say even honey also, even some even talk about the Patnagali largely most of their products are based upon the agriculture products. So, they have the direct contact with the farmers.

Even these multinational companies who are manufacturing the potato chips they are, even your McDonalds, the French fries which they are manufacturing and selling in the market, they have the different quality of the potato’s and directly they have the contact with the farmers, so that is the way they are going to manage the price. Otherwise, if they are going to buy the potato from the market, so it means it may be possible that that quality of the potato is not available and second thing the price which they are paying is very high.

So, the total calculations will get disturbed and means whatever we are thinking about that may not happen. A profit making profit project proposal may turn out to be a loss making proposition and we have to close down the entire facility. So, it means when you go for this as a standalone analysis we look at the different techniques which are available here, we can change some of the variables and then we can go for the sensitivity analysis, we can go for scenario analysis, break-even analysis and other this models.

So, practically we will discuss these say techniques one by one, we will learn about how to implement sensitivity, how to use a scenario analysis, how to use break even analysis for making the say risk analysis in the capital budgeting proposals, so that practically we can use it. Second part of this risk analysis is the contextual risk. When you talk about the contextual risk, 2 important say components are here corporate risk analysis and the market risk analysis. Corporate risk analysis is concerned only if some existing firm is going to start the new project or going to make a new investment.

Then say outcome of that new investment can affect the existing operations of the firm also or the existing say processes of the firm also, because of every corporate, every firm the main concern that pertains to is of the shareholders. Because all other stakeholders are external stakeholders only the shareholders are the once, the owners are the once who are internal stakeholders. So, for the internal stakeholders the ultimate objective of every firm every business is the maximisation of the value of the firm. And when the value of the firm is maximized shareholders are stand say benefited to the largest extend.

So, if you are going to start a new investment process, it means the objective is that you want to add up a new value, additional value to the existing value of the firm, so that the value of the value of the whole firm is maximized. But if the project then which we are going to start, adopt if that is means turning out to be a risk making proposition or risk taking proposition, then even the say profit making capacity of the existing firm will get negatively hit or get negatively effective.

So, we will have to look for that the new investment proposal is going to increase the value for the say existing shareholders or is going to erode the value for the existing shareholders, so you be have to look it at that the impact should be say energetic. Means adding the value to the existing value of the shareholders and if there is any factor going to means cause any negativity we will have to check for that. And then the market risk analysis, market risk is called as the systemic risk calls, market risk comes because of the different kind of the factors because market business depends upon the market.

And market has the different kind of the say situations which some time create the problem even for the well-functioning organization. For example, the market situation is getting affected by the intrastate in the market, inflation in the market, import export situation in the market, purchasing power of the people in the market. Now, these days for example market is negatively hit, that the is a recession in the market, Indian market is badly gripped by the recession.

And you might have seen that recently to supports the industry and to means say gives some breathing period to the industry during this recessionary period government had to reduce the tax rates from 30 percent to 22 percent. So, that tax incentives are given to all the sectors by the government just to means help the industry that for the timing being, when the sufficient sells are not taking place, when purchasing power of the people is negatively getting hit, so how we have to means take care of that.

So, market factors are there which we call as a systemic factors also, causing the systemic risk, normally what we do, shareholders when we make the investment in the market. When shareholders make investment in the market they do not miss put all their eggs into one basket, they do not buy, total investment they do not make into the stocks of one company, but they keep their total investment sufficiently diversified. So, that if there is one loss in one company they can have the profit in that other companies shares.

Or if there is a loss in the one industry where there company belongs to where they have made the investment, so there is a better performance by the other industry, so the loss in the one company stocks can be means offset by the profit or the dividend earned by the say investment made in the other companies stocks. So, diversification normally the shareholders use to deal with the systemic risk. But to a larger extend we have to anticipate that in future how the market will behave, how the inflation will behave, how the intrastate will behave, how the say demand and supply situation will behave?

What is the government policies will be? So, in totality we have to make this risk analysis, we have to make the risk analysis for the standalone risk also, standalone project also means risk analysis for the stand alone project also and risk analysis in the contextual say way also, there we have to say analysis a risk for the firm as a whole who is going to start a new investment activity and to some extend analyse the market risk also. So, the main focus here will be in this discussion will be upon the standalone risk, how to deal with the standalone risk which is going to be only to the new project and to some extend we will deal with the corporate risk also.

Market risk analysis we will talk more while we will discuss and talk about the cost of capital. There we will discuss this risk contextual risk that is a market in detail, but here also for the reference purpose we will be dealing with we will be talking and discussing. So, in totality we will be talking about all 3 kind of the risk and trying to find out the ways and means how to deal with this. But the larger focus will be upon the say analysis of the standalone risk and the corporate risk.

So, I stop here with the initial discussion up on the Risk Analysis in the Capital Budgeting proposals. And further more into this process we will go and we will learn about that how we can apply the sensitivity analysis, scenario analysis, break even analysis and the other say techniques or the methods and models given for the say analysis of the risk in the standalone projects. But that we will be doing, that we will be doing in the say the subsequent classes for the moment I will stop here with this initial discussion and remaining discussion we can have in the next class, till then thank you very much.