Working Capital Management
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Lecture-27
Incremental Inventory-II

Welcome, students so we are discussing the incremental analysis and in the previous class we were working out the change in the inventory policy from current to A and as a result of change in inventory policy by the company how much investment is required to be made in the finished goods inventory level and in the net working capital.

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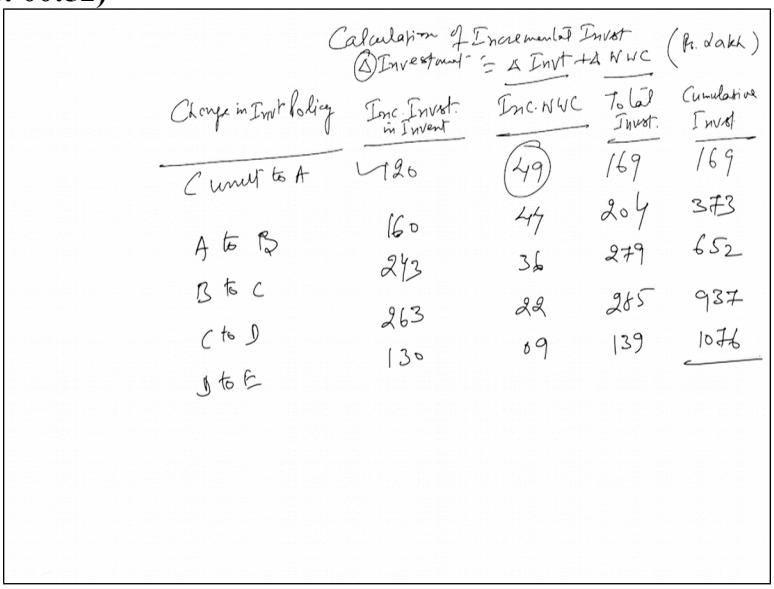

And we found out that the total investment change Delta investment from current to A will be 169 lakhs right. So, it means additional investment of the 169 lakhs has to be made by the company if they want to move from the policy current A. But the net effect of that will be that the company's sales will increase by 222 lakhs. So, the major advantage major benefit and then we will have to work out the profits out of those sales. We will do that in the next part but currently lest us workout the requirement of investment and another policy levels.

So, let us move from the policy A to B, A to B, so it means policy A to be here many more from the policy A to B how much incremental investment in inventory we are going to make a 160 lakhs because in the previous part we have seen the investment in inventory will be how much that is from 610 to 770 so it means 160 will be the increased investment in the inventory and as a

result of that how much is going to be the change in the working capital in the cost of working capital that will be increased investment in the working capital will be 44 lakhs and finally the total investment will be 204 not 169 as in case of the first policy.

So, there will be a change so 104, so total cumulative investment will be 373 rupees this is cumulative investment and we are moving in the sequential firm from the current to A and then from A to B not directly from current to A current to B right. So, we have to move in the, that we have been losing it slowly and steadily so we have move from current to A, A to B. Let see now situation from the B to C when you move from B to C. So, what will happen the increase investment in inventory will be how much 243 lakhs and in the working capital you are going to increase 36 lakhs?

And total investment will be going up by 279 and cumulative investment will be becoming 652 B to C. Then we talk about C to D right when you move from C to D then it will be 263 this is 263 then you will be increasing investment in the net working capital by 22 lakhs total change and investment will be 285 and finally the change in investment will be 937. And then it is D to E right, it is D to E, so it means what will happen now increased investment inventory is under 30 lakhs then it is 9 lakhs.

And totally changed in the investment will be 139 and it is 1076 right. So, this is going to be the picture of that cumulative investment we are going to have here. So, it means when you move from current to A change in the investment total investment that is a investment in inventory + investment in the net working capital will be 169. When you move from A to B it will be 373, from B to C it will be 652, from C to D it will be 937 and from D to E will be 1076. So, this is the total level of the cumulative investment we are going to make here.

Now the next part but we have to do is we will have to work out the incremental operating profit will have to work out the incremental operating profit.

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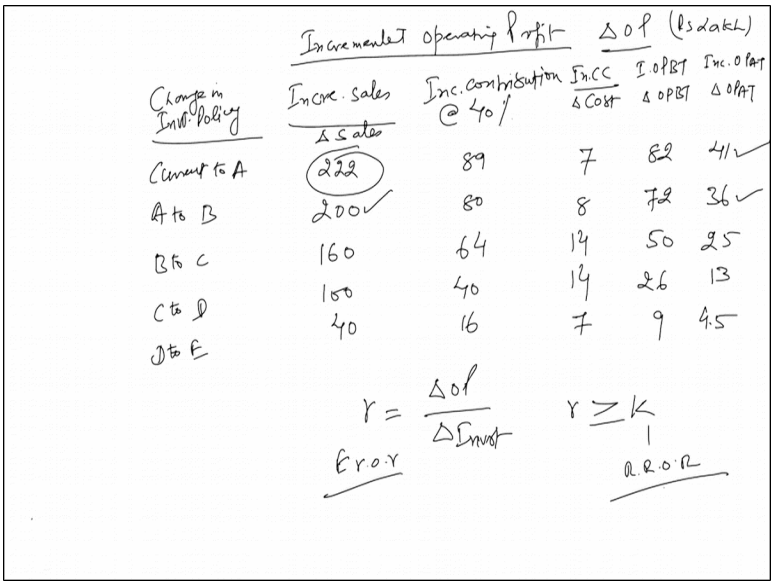

So, same way will have to work out the incremental operating profit incremental we will have to work out as which we called it as Delta OP change in the operating profit as in the previous case we have seen the Delta investment is the Delta OP in the operating change in the operating profit and for calculating this again we will have to make the columns first is the change in first we will have to make the first column which will say that is a change in inventory policy right.

Then as a result of the change in inventory policy, Incremental sales how much incremental of sales we are going to have right and then we have would have incremental contribution, which I was talking to you as a gross profit. You can call it as a contribution also incremental contribution that will be called as Delta sales, change in sales. You can say it is a delta sales it is called as a delta new change in the delta but it is the change in the contribution.

We will have to see change in the gross profit or change in the contribution, you can say increase in the contribution or the say incremental contribution we will have to work out and that will be at the rate of 40% that will have to work out at the rate of 40%. So, 40% is the gross profit or so we call it as a gross profit on contribution this is 40%. And then we will have to see that next thing is incremental carrying cost will be how much.

We will have to see the change in the incremental carrying cost, so incremental carrying cost will be going up change, so you can call it as change in cost, delta cost then will be the incremental operating profit before tax will have to see incremental operating profit before tax you can see it is a delta operating profit or OPBT operating profit before tax and then it is the incremental operating profit before tax sorry operating profit incremental operating profit after tax OPAT.

So, that will be the change in OPBT a change in the OPAT right. These are the columns, so change in the inventory policy change in the incremental sales because of that so it is delta sales, incremental contribution at the rate of 40% you can say at the rate of 40%. Incremental carrying cost is, carrying cost will also increase because now the sales are going to increase inventory is going to increase so carrying cost will also increase and then incremental operating profit before tax and incremental operating profit after Tax.

So, here we will have no two; make all the calculations this is called as at 40%, so now will make the all calculation here. So, inventory change in inventory policy from current to A change in the and inventory policy from current to A, how much is this going to be changed in the sales? See here is going to a change in the sales, 772 we are losing the sales currently we loosen the inventory will increase the level of inventory of the finished goods.

Other loss of the sales will come down from the 772 to 550 and then further it will also go down so it means incremental sales will be how much 772-550; So, in this case how much is going to the change in sales? Change in the sales will be 222 lakhs I am writing here rupees lakhs, this is 222 then is A to B move from A to B will see here what happens but here incremental contribution is going to be how much? Incremental contribution is going to be say it is 40 % it means the 40% off the sales is going to be contributions.

It is going to be how much it is going to be 89% you can calculate it is incremental contribution at the rate of 40% it will be 89% of the increase sales and services and how much is the incremental carrying cost carrying cost is given here so it is 27 when we are having the current inventory policy and we are losing the sales of 200 and 772 lakhs to the carrying cost is lowest 27 lakhs but when you move from the policy current to A your sales will increase investment inventory will increase net working capital will increase.

So, certainly you are carrying cost will also increase and then increase in the carrying cost will be by how much amount 7 so it means what will happen finally. So, this is the incremental contribution 89 sorry this is not the % 89 when you say here this is the absolute terms 89 lakhs not percentage comes between the absolute terms. So, it is means it is 89 lakhs so 220 at the rate of 40%, 220 rupees sales are going to go up at the rate of 40% and contribution 89 lakhs of the contribution is going to a further added up.

And carrying cost is there is going to increase by 7 so finally you can say that operating profit before tax is 82 and after taxes because tax rate is how much 50% it means after tax operating profit will be 41 lakhs it is rupees in lakhs. Now you move from A to B, when you move from A to B in that case what will happen we will have the incremental sales of 200 lakhs, incremental contribution will be 80 lakhs and then it will be changed in the carrying cost.

So, if you change that see the carrying cost carrying cost was 34 but not going to be 42 going to increase by 8, so this is 8 and then it is going to be how much 72 operating profit before tax is 72 and then it is 36 operating profit after tax. After that you go for B to C, from B to C if you go from B to C so change in the sale is going to be 160 then incremental contributions is going to be 64 then it is going to be 14 and then it is going to be 50 and it is going to be 25 lakhs rupees.

Then you go from C to D, when you go from C to D so change in the sales will be 100 and incremental contribution will be naturally 40 and then it is going to be 14% incremental carrying cost is 14% this is 26 and this is 13, operating profit after tax is 13. And then from D to E it is 40 change in the sales is going to be 40. Then it is going to be 16, 40% of the 40 is 16 than carrying cost is going to go up by 7 and then it is going to be how much?

This will be carrying cost is 7 so it means the next change will be how much D to E will be 9 yes it is 9 and then it will be 4.5 by half of that or maybe call it as 5 we have taken round out that it off so it is 5 or 4.5 something like that or say this is going to be changed in operating profit going to be carrying cost is this. So, your changes say this 40 carrying cost is increasing incremental contribution is 16 and carrying cost is going to be 7.

So, here incremental profit after tax is 9 sorry incremental operating profit before tax in 9 and after tax you can see it is 4.5 lakhs. So, this is the situation now has emerged, if this is the situation then we will have to now go for the next level and that next level is that we have to work out the say expected rate of return, we have to work out the expected rate of return and expected rate of return is called as r = change in operating profit divided by the change in investment.

So, Delta operating profit divide by the Delta investment or the change in the investment, so we have worked out the say change in operating profit here and we have worked out in the previous calculations change in the investment cumulative investment. We have found out both

investments are the different policies level are with us from current to A we have the investment from A to B, B to C, C to D, D to E have all the investments cumulative investment as well.

And the operating profits are also available with us that is at the current to A this much and then A to B, B to C, C to D, D to E all the profits are available with us. So, you see that when we move from policy current to A maximum level of increased change in the sales is going to take place 222 lakhs and as a result of that operating profit after tax is also highest. Then A to B the change in the sales is now not that much.

But it is still higher 200 and the operating profit after tax is the second highest that B to C, C to C that know this trend is falling down immediately when be relax the policy from the current to A level then the sales are picked up after that now the sales are going up but not at the same rate at the at the declining rate. As same is the case with the operating profit, that operating profit is also increasing but at the declining rate. Now you have to take a decision what should be do here and we have to calculate the r, r is called as expected Er you can say expected rate of return.

This is expected rate of return which means simply called as r. So, if you talk about this compare this expected rate of return r, with the required rate of return then in that case we will have to now make a decision that how the things are going to be there. so, the basis of the decision is what that has to be either then great say equal to or greater than or equal to K, r is the expected rate of return and K is the required rate of return so it means now we have to see that expected rate of return should be greater than the required rate of return or at least equal to the required rate of return.

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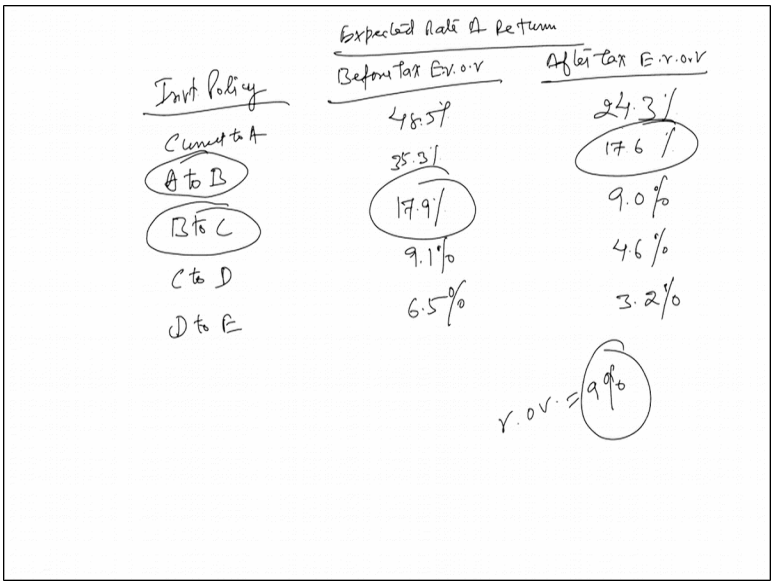

On the basis of this process let us see now calculate the change in the profit or you can call it as a rate of return that is the expected rate of it turn. So, we will see that expected rate we will see that expected rate of return expected rate of return and if you calculate the expected rate of return here again we will have to change the policy in an inventory policy again we have to go for the inventory policy. Then it is the before tax expected rate of return and then after tax expected rate of return before tax expected rate of return after tax rate of return and then the inventory policy.

So it is current to A so, before tax expected at rate of return was how much 48.5% or it was 49% so you can say after tax will be how much if you calculate it works out as 24.3% how we have calculated this 48.4 this 48.5%. We have calculated this 48.5% by taking the amount of the profit and operating profit given to us in the; so even the calculated is operating profit here is 41. So, if you calculate this rate so 41 to be divided by 169. So, if you divide this 41 by 169 so the rate is; we have got the rate of return expected rate of return is 48.5%.

So, this is operating profit and the policy current to A and this is the investment in the inventory that is one total investment 169. So operating profit is divided by the expected investment we are going to make or invest increased investment in inventory we are going to make and the policy current to A means it works out as 41/169 so it is 48.5%. So, this is the first expected rate of return and half of that is made because the tax rate is 50%.

So, half of that is 24.3 % and then from A to B is how much the profit is going to be there 35.3% this is 35.3% that is before tax and after tax is going to be 17.6% and then is B to C is going to be 17.9 % and it is 9 %, B to C 17.9 % and 9 % and then it is C to D it is 9.1% and in the it is 4.6 %

right and then it is D to E the expected profit before expected rate of return before tax is 6.5 % and here in this case it is 3.2%. So, these all returns are also available with us.

So, we have worked out all the three things, we have work out the incremental investment in the inventory, so cumulative investment when we move from the policy A to B to C to D to E. Then we have calculated the incremental operating profit before tax and after tax over the stage this 5 policies from current to A, current to E current through this operating profit is available with us and the next calculations we have calculated the say expected rate of return before tax from the policy current to E and expected rate of return after tax where we move from policy current to E.

So, now all these calculations are with us, now we will have to take a decision here that how we have to decide about that where we should move which policy we should move from and we should stop at. Say if you make this analysis of this table you can say that if you move from Inventory policy of current to A then what will happen your operating profit or even called it as after tax expected date of return will go up by 24.3% very high.

If you need from A to B then sales will increase but that the operating profit will go up at the declining rate so it will be 17.6% and when you move from B to C, it will be 9% profit is going absolute profit will be very high but percentage change in the profit is declining so because you can sell more in the market you can penetrate in the market to expand the market by selling more in the market but in that case you have to compromise with the profits.

If you lower than the selling price your number of units your selling in the market of the total volume of the sales your making the market will certainly go up but your percentage of the profit percentage of the return will go down. But if you multiply this percentage with the total number of units of the total sales we are making, if you calculate this 9 % as the given amount of the sales that would be highest.

So, it is a our choice whether we are satisfied with the same movement from the current to A and earning 24.3% if you want earn 24.3% obviously your sales will be lesser as compared to the level that is B to C. But if you want to capture the largest market of the largest size or part of the market for the largest share in the total market pie in that case you can find out that yes we will have to reduce over margins.

We have to reduce the selling price that way your existence in the market will expand but the profit per unit will go down but the total amount of the sales will be very high as a result of this policy what happens? As a result of this policy while lowering down the selling price and by lowering down our own margins is also immediately we are seeing that the margin is lowering down from the 24 % to 9 %. But tomorrow when the many players will go out of the market because they would not be able to say have the competition with this kind of the giant in the market.

Who is able to sell at the lowest possible price so many people will vanish from the market many players will vanish from the market and when the people got off the market at that time you can check up the price increase the profitability increase the price at that time you have the double advantage of increased sales also increase market share also and increased investment also and increased returns also but currently we see that is a situation to come in the say time to come but currently be see the situation what is the situation is.

For example our required rate of return that is the required rate of return that is ROR that is say 9% other required rate of return it I would say it is 9%. Now how do you decide by the required rate of return? Financial experts say that your required rate of return should be, minimum it should be equal to the cost of a capital. He should be able to recover you should earn that much rate of return from any business or any say this sales or say any kind of the transactions.

That is minimum equal to the cost of the capital because in the business capital comes from the different sources either it is owned capital from the internal sources the capital owned by the firm, their own resources or it is a borrowed capital. If it is a borrowed capital and if it is borrowed at 9% the cost of the capital we are going to pay the cost of the capital firm is going to pay is in 9% it means the firm should earn minimum 9% from the incremental investment in inventory otherwise there is no point making this investment one.

But if the cost of capital is higher if the capital has been taken or he has been borrowed the funds have been borrowed at 12%, 15% then the required rate of return has to be the same right. And if it is owned capital if it is from the internal source with this capital is generated from the internal sources in that case there has to be the opportunity cost of capital. You invested capital in this business inventory or you invest this capital outside.

So, what is opportunity rate of ; what is opportunity cost of capital that will work here as the benchmark for considering it is a required rate of return and for example in the situation but they work that out here is in this situation we find out is that 9% is our required rate of return. So, we would say that we should accept the policy that is from B to C here before tax will be expected rate of return will be 17.9% and after tax will be 9%.

So, at this level how much level of sales will be able to make? Our sales will be going up by total cumulative sales if you make out that is 22 + 200 + 160 will be increasing the sales. So, it will be somewhere how much 422 and then 522, 582 lakhs of the sales we are going to increase and increase contribution is going to be 64 lakhs because per unit selling price is going to go down. And finally if incremental carrying cost is also going to increase by 40 lakhs so finally your incremental operating profit before tax will be 50 lakhs and then incremental operating profit will come down to 25 lakhs.

But we are satisfied here because a required rate of return is 9% and we are getting that at the policy C when we are moving from policy to B to C we are getting that required rate of return so we are satisfied and if you look at here the level of inventory investment in this case the total investment in inventory will be making how much 652 lakhs. This much of addition investment we have to make and this is the total investment will be making.

So, it means 169 at this level to 373 at this level, so it means you are moving from B to C you will be investing 652 lakhs in the total investment will be making in the inventory as well as the other net working capital. Increased the total sales will be 582 lakhs right and incremental profit will be 25 lakhs which is incremental profit after tax and finally as I expected rate of return will be 9% which is equal to the cost of capital.

But here we can take a precaution for example 9% just the cost of capital but when the capital invested in the business. Business may take other kind of risks also. The business should not be compensated only for the cost of capital of the borrowing rate rather they should be compensated for the risk they are taking. So, we can see here that if it is not 9%.

To be on the safer side to be on the safer side it may be possible that cost of capital me also increases if possible that they carrying cost also increases or some time investment in the net working capital of the say assets may also increase in that case of networking case may also

increase. In that case it may be better to be on the safer side and if you wanted to be on the safer side in that case it can be possible that you reach at this level A to B.

And you earn this rate of return that is expected rate of return will be 17.6% which will be much higher of this 9% required rate of return the difference is 8.6% and the difference of the 8.6% covers almost all kind of the risks. All kind of the risk are going to be covered here. Any kind of the risk of say inventory not being saleable or maybe say investment in the networking capital is going to increase or maybe any other kind of the risk obsolesce risk is also there.

Lack of sales is also there, change of the market condition and if you look at here the level of inventory this is also there when we are into business to take different types of the rest if you want to have a premium for the risk because at 9 % only just cause of capital but we just get compensation for the other sort of the risks also we should use to be on the safer side we should select the policy A to B.

So maximum we should stop at the policy B If you stop at the policy B so what will happen in at that level your sales will be to increasing by 422 lakhs total and incremental operating profit after tax will be 36 lakhs and in the investment part to talk about your investment will also be not 652 but it will be lesser that is 373 lakhs, so investment will need will also go down your risk will also go down and required rate of return will also be met from the expected rate of return.

And as a result of all these permutation combination your expected rate of return will also be sufficiently high which will cover for all kind of risk making it 17.6 % which is 8.6 % higher than the required rate of return. So, it means it advisable it is better that incremental investment in the inventory at this stage should be not stable made from current to C but is better to move from current to B and then see what happens how we are able to capture the lost sales.

How we are able to serve the market? How we are able to say manage the situation in the market how much risk we are going to take when we are going to increase the investment from the current level to the new level and how this whole scenario is going to emerge. We should look for this we should wait for sometime so rather than movie stay away from current to C is advisable that you move from the current to B policy of inventory.

Invest only this much amount which is total investment that is 373 lakhs and get the sufficient amount of sales increase, sales increased by 422 and increase your profit that is by 36 lakhs and

in terms of the percentage it will be 17.6. At this moment it advisable that incremental investment in the inventory should be up to the policy B we should you from the current to B but not to C because we move from current to C then you are expected rate of return it just equal to the required rate of return that can be the risky proposition.

So, better it is too strict or currently to stay at policy B from current to B and then earn the 17.6% return and if the situation warrant sorry if it is feasible of it is more comfortable to expand the market and increase the sales and increase the level of inventory and to avoid the lost sales then we can anytime move from B to C. But in the one go moving from the current to C will not be advisable.

So, this is how we used incremental analysis still working out the investment in the different current assets. In this case we have seen this use of those incremental investments in inventory and in the due course will be learning this use of incremental analysis in the other current assets also maybe the credit sales or the any other current assets. So, at the moment I stop here and the remaining part of discussion we will do in the next thank you very much.