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**Lecture-34**
**Written Credit Policy-I**

Welcome students, so we are discussing the problem of the length of the credit period and we have seen in the previous class that since seller has to pay the advance tax on the sales he is making and the profit is earning on that he has to make the advance payment of the tax because of that the credit period cannot be extended unlimited leave. It has to have some limits because we have seen with certain calculations here that because of the time value of money and because of the say a tax the seller is paying on the loading factor also the net present value becomes a negative after 9 months sorry after 12 months.

And it proves that the credit period cannot be extended up to 12 months it has to be somewhere between 9 months and the 12 months and we have seen here that the problem for the aggravates when the seller has to pay the tax on his loading factor also which is not his profit the prop tax is paid normally on the profit not on the loading factor. But he is supposed to pay because that loading factor is also added into the profit and on that also has to pay the tax at certain rate.

We assumed here the 45% tax rate so NPV becomes the NPV of the opportunity cost is negative. So, because of that reason is a limitation serious limitation for extending the credit from the seller side. Earlier we have seen the limitation of the buyer side. You know the question arises that in this case what should be the maximum length of the credit period.
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## Trade Credit Period

(Amount in rupees)

| | 3 *months* | 6 *months* | 9 *months* | 12 *months* |
|---|---|---|---|---|
| 1. Base price of the product(s) | 10,000 | 10,000 | 10,000 | 10,000 |
| 2. Loading @ 24% p.a. (or 2% p.m.) (opportunity cost) | 600 | 1200 | 1800 | 2400 |
| 3. Final price | 10,600 | 11,200 | 11,800 | 12,400 |
| 4. Cost of sales | 8000 | 8000 | 8000 | 8000 |
| 5. Net profit | 2600 | 3200 | 3800 | 4400 |
| 6. Income tax @ 45% | 1170 | 1440 | 1710 | 1980 |
| 7. Profit after tax | 1430 | 1760 | 2090 | 2420 |
| 8. Amount payable at the point of sale (item no. 4 + 6) | 9170 | 9440 | 9710 | 9980 |
| 9. Amount receivable after the credit period (item no. 3) | 10,600 | 11,200 | 11,800 | 12,400 |
| 10. Discount factor @ 2% p.m. (opportunity cost) | 0.9423 | 0.8880 | 0.8368 | 0.7885 |
| 11. Present value of amount receivables after the credit period (item no. 9 × 10) | 9988 | 9946 | 9874 | 9777 |
| 12. Net present value (item no. 11 – 8) | 818 | 506 | 164 | – (203) |

From this say set of calculation the set of calculations we have seen that it is point it is you see that we have the credit period with NPV is 164 it is positive 9 months and 12 months it is negative. So, it is somewhere here that the between this and this it is somewhere here that it is this and up can go up to this somewhere it has to be more than 9 months but less than 12 months. So, is there any mechanism to find out the exact length of the credit period at which the NPV becomes 0.

Yes there is a mechanism that with the help of which we can find out that NPV is 0 that length of the credit period will be the most suitable on the maximum credit period which the seller can allot to the buyer beyond that it is not possible he should not do it. If is a informed seller and his wise seller if they say making all the sales on credit and all the factors and making all the calculations he should not extend the credit beyond that particular period of time because after that he is not earning on those credits is rather is paying up and NPV is becoming negative.

In this case let us learn that what should be the maximum length of the credit period at which the NPV is 0 or he can extend the credit. In this we have not been able to get the answer that we say that it is somewhere between 9 and 12 months what part is exactly that period. So, let us see what is that period? And let us try to learn that what is the way out? Is there any model available which can help us to calculate that period? Yes that is all model available with us.

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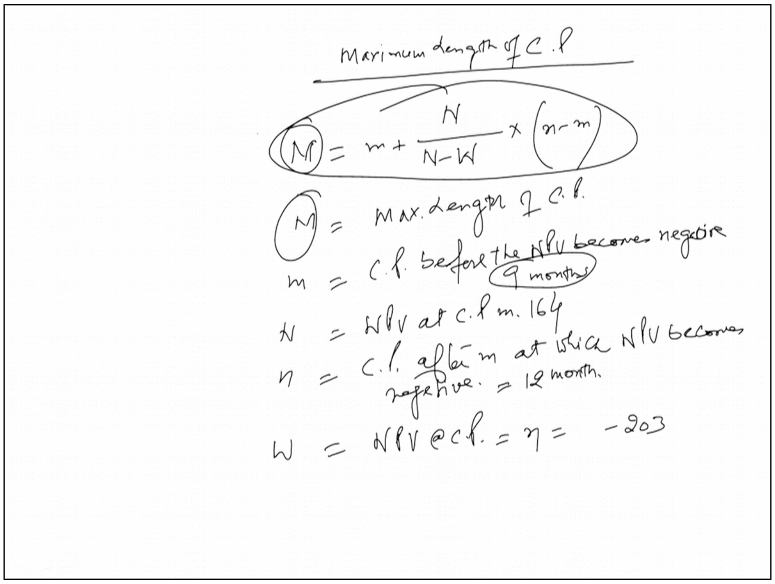


So, how to find out the maximum, maximum length maximum length of credit period maximum length of credit period so, how to find it out we will have to see here, for finding out that maximum length of the credit period, we will see here that maximum length of credit period. We have model here this model is M capital M = small m + N/ N - W into small n – m, this is a model with the help of which we can determine the maximum length of credit period M = to small m + 10/ N - W into n – m.

So this is a model what is M here, M is the maximum length of credit period CP this is thing we want to find out. What is the small m? Small m is the credit period before the NPV becomes negative NPV becomes negative right. In this case what is credit period? Credit period before the NPV becomes negative NPV becomes negative at what period and NPV becomes negative at 12, so credit period is 9 months in this case it is 9 months.

Credit period before NPV becomes negative so that time period is 9 months in this case and then we have to find out the answer for the N. And N is the NPV at credit period m small m at 9 months means in this case it is 9 months and that is at the 9 months what is NPV? NPV at the 9 months is 164 rupees 164 that is the NPV and which will be the numerator here. And then we have the and small n that small n is the credit period after m at which at which NPV becomes negative.

This is CP credit period after m this is a credit period after m at which NPV becomes negative and in this case the what is that that is 12 months. And now We have left with one thing only that is W. W is the NPV at credit period and small n NPV that is the at this NPV at the credit period

NPV at the credit period and small n that was how much that is-203. So, with the help of this model you can easily find out the length of the credit period that what should be the maximum length of the credit period.

If you apply this model in our case in this situation we have seen here in this case we apply if you would find out we have got an answer here that the credit period is somewhere between 9 and 12 months. But how much exactly is with the help of this model will be able to find out that What is the value of M maximum length of the credit period.

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$$M = 9 + \frac{164}{[164-(-203)]} \times (12-9)$$

$$= 9 + \frac{164}{367} \times 3$$

$$M = 10.34 \text{ months}$$

So, let see and calculate that here M is the maximum length of the credit period we want to find out so what is that 9 + 164 this was the NPV at 9 and then is the 164 is minus and here it is at the NPV at credit period N this was how much -203 right this is -203 and into 12 - 9 so if you solve this you will get here 9 + 164 divided by say how much because it will become positive plus so it is 364 but I think it is going to be how much 347 is going to be 7.

So, in this case 367 right and we are multiplying it by 3 so how much it is going to be you will get this something like 10.34 months,  10.34 months this is the maximum length of the credit period in this case. The value of M is that is a maximum length of credit period that is 10.34 months at up to maximum credit can be extended is that is up to 10.34 months not more than that. If you extend the credit needed him up to 10.5 months or 50 months in that case also then NPV is going to be negative.

You can check it also that weather at 10.34 months NPV is becoming 0 or not at this point NPV will be zero after this if we extend the credit period for more than 10.34 months even for 10.50 month in that case sources NPV will be negative. So, at this length of the credit period which is the maximum length of credit period NPV should be zero rights. Let us apply a check here try to find out whether NPV becomes 0 at this length of the credit period or not right.

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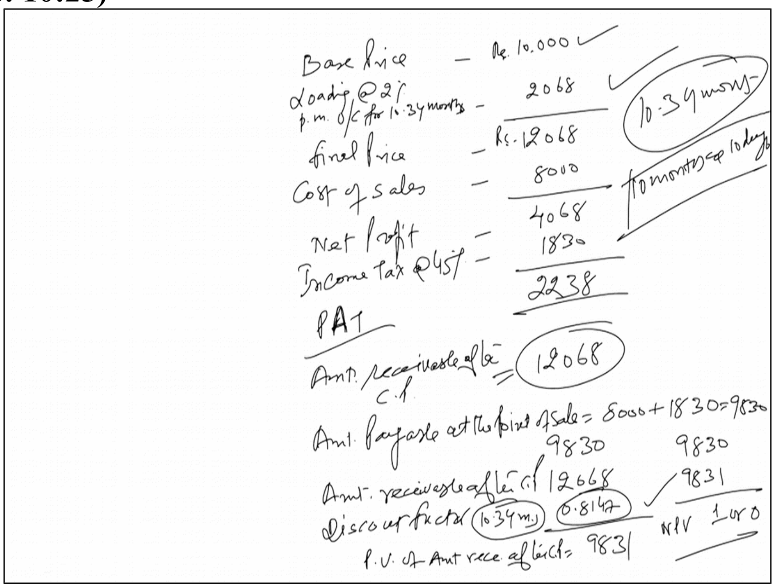


In this case go for this first thing is what was the base price? Base price was 10000 right rupees 10000 we wanted to sell for 10000 rupees without credit period we have to sell on cash this was the amount that will be selling for 10000 sales of 10000 for 10000 right. Now second thing is loading factor loading at the rate of 2% per month we will call it was loading at the rate of 2% per month that is the opportunity cost per month opportunity cost and for a period of how much for 10.34 months loading is at rate of 2% per month opportunity cost for 10.34 months.

So, how much will that come out to be if you calculate this will come out as 2068 right. So, what will be this? This will become the final price, this is the final price. So, how much it will be it is 12068, this will be 12068 rupees 12060 this is a final price right. Now what is the cost of sales, cost of sales is finally it is 8000. So, how much is the profit net profit is NPV net profit here is 4068 rupees 4068 and what is the profit after tax.

If we apply the tax rate income tax at rate of 45% how much is going to be that? That will be somewhere 1830. So, so profit after tax is it is 8 then it is say 3 and then it is 22, 2238 this is our PAT right. And amount receivable now amount receivable after credit period will be how much 12068 this is one amount receivable after the credit period or we can say that here how much amount is payable amount receivable after so this is a profit after tax as 22, 38 we have calculated amount receivable after the credit period is 12068.

And amount payable at the point of sale at the point of sale is so much that is going to be a something like first you are going to pay 8000 + you are going to pay how much that tax we are going to pay that is how much that is 1830. So, this amount is 9830 we are going to pay how much 9830. Amount receivable after this the credit period amount receivable after CP is, that is we have already written here that is 12068 right and discount factor now discount factor for how much at the rate of 2% per month.

Opportunity cost 2% per month and for a period of discount factor for 10.34 month that factor is 0.8147. So, if you try to find out here the present value of amount receivable present value of amount receivable after CP after credit period is how much that is going to be for multiply 12068 with the factor, this will work out as 9831. So, how much is the amount which we are going to pay at the point of sales 9830 and what is the present value of this amount receivable after the say at the end of the credit period that is 10.34 months that is 98.

So what is NPV? Is here it is 1 or it is almost 0 so verified. This is a verified amount that is here we have to calculate here that if this is the time period maximum that is 10.34 months if we are going to extend the credit in this case in this situation only for a period of more than 9 months less than 12 months and maximum that is for a period of how much 10.34 months. Before this period you are going to extend the credit NPV is going to be 0 after that even 10.50 or 11 months 11.50 and NPV certainly how much and NPV will be negative.

So, we have to find out that where NPV is 0 that is the maximum length of the credit period which can be used or the credit period can be extended up to that limit the credit period can be extended by the seller to the buyer otherwise it will go against the seller. He should not make those days where the credit period is our expected by the buyer is more than the nine months or I am sorry in this case 10.34 months

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D.f 0.8147

$$D_f = \frac{1}{\left(1+\frac{i}{12}\right)^{n}} = \frac{1}{\left(1+\frac{0.24}{12}\right)^{10.34}}$$

$$Df = 0.8147$$

Here I would like to clarify one thing for those people who have less idea of the discount factor. How we have calculated the discount factor here we have used the discount factor that is the say 0.817 sorry 0.8147 so we have calculated this, this discount factor is discount factor we are you there is 0.8 147 so we have used the discount factor formula. So, it is we can use this that is Df = 1 by that is 1 by 1 + I / 12 and here we have to take the power n.

With the help of this formula we have done this discount factor see this will become like 1 by 1 + interest in this case is 24% per annum and divided by how much 12 months and raise to power here is 10.34 months N is 10.34 months if you solve this works out as 0.8147 so this is the discount factor we have used here that is 0.8147, so, with the help of this discount factor because opportunity cost is 24% per year 2% per month.

So, when we are discounting it for a period of 10.34 months here we are finding out is that the NPV of this deal is 0 for this maximum length. So, here the cause of limitation or maybe the cause of concern here is the advance tax payment system. If we have to not to make the payment in advance tax payment in advance then as I told you that even after 12 months or even on the 12 months credit period the NPV will be positive.

As we have seen in the previous slides in the NPV are found that works out to 6. So, that is the main problems that we will have to look for and we will have to restrict the credit period. So, both the sides have the problems buyer also has a problem not to get the extended credit period and seller also as a problem not to give the extended credit period. And here you can say that when you talk about say 10.34 months.

Then important point 10.34 months is initially to have an idea is not exactly has to be 10.34 month. For example in this case we got an idea that the NPV is going to be negative after 10.34 months so it does not mean that exact it has to be in the terms of sale agreement of sale like that. It can be like say 10 month and 10 days so maximum length of credit period he can say to the buyer that if you want to buy from me on credit I can extend you the maximum credit if the discount factor is 2% or loading factor is 2%.

And I think more than 24% per annum nobody will be able to make the payment to the seller because at that more than that more than 24% is better for the buyer to borrow from the bank and to make the payment to the seller and only expect the credit for a period up to the 12 months after which the loading factor is 2% per month or 24% per year more than that is a limitation to the buyer and in case of the period because of the advance tax payment system it is a problem to the sellers.

Both of them are caught in certain conditions because of certain factors. So, unlimited extending credit unlimitedly is not possible because if you are doing that if the seller is doing that is not making any profit out of that rather is ending up making losses in the form of the net present value. The absolute value there might be a profit what is the apps in the NPV in which we should normally look at he is making the loss or he is not making it right.

It is not a right proposition we should not go for that kind of the business. So, these two limitations we have seen for the buyer as well as the seller also. And we were talking about the set and other things so we have seen here that limitations of credit period we have seen that from the buyer's perspective also from the sellers prospective also. We have learnt that how to determine the maximum length of the credit period we have seen in the model for that also.

And next important thing now will be learning about and talking about is that is up elements of the trade credit policy.

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There are the two important elements of the trade Credit Policy one is the written credit policy and other is the say a credit policy of the credit limit. Written credit policy and the credit limits. Here credit policy when we talk about that the credit extending the credit we have the different stakeholders in the business. Management of the Company fixes the sales target to the sales or to the marketing department.

That you have to sell this much then we prepare the overall budget for the firm or for the organisation we say that in the coming one year or next 6 months or the next one quarter this much of the sales you want to make in the market. Now that is a sales target which is fixed. Then it remains maybe sometime explicitly mentioned or sometime it remains silent.

How much has to be on the cash on how much sales have to be on the credit. Now once it is only written that the sales target is this much lacks of the rupees crore of Rupees millions of the rupees in that case it is silent in this case that whether the sales are to be in cash or credit that means sales are sales whether weigh on cash on credit. So, since it is not explicitly mentioned so marketing department when will you communicate with the target by the say with the board of the directors or maybe the companies top management.

They would be communicated that this quarter you have to sell say 1 crore rupees worth of the sales or but 1 crore rupees worth of the goods to sell in the market. Objective of the marketing team remains that yes we will have to achieve the target. They are little concerned whether the sales are on cash or the sales are on credit. If sales are on cash fine they would like to sell on the cash and that is there first choice.

But to meet the credit or some time to meet the objective for the target at some time to cross the target or to say reach up to the target. If credit is required to be given or sales are to be made on the credit then they would not even like to think about that. Yes they would say that somebody's ready to buy on cash ok first you buy on cash after that we are ready to sell on the credit also and how much credit to be given to the different buyers that is a million dollar question.

See that it depends upon the bargaining capacity of the buyer also. If some say marketing manager goes to a distributor and he request that you this much of our product in the time to come and he would say that his intention would be that maximum sales would like to say that with the material is going to receive from the company that would be on the credit after that he sells the product in the market after the sales proceeds are recovered he will make the payment to the company.

So, marketing guy will be requested by the distributor will be impressed upon by the distributor that you sell me on credit and after the credit will make the payment to the company. Now the marketing department is written credit policy from the company inside if say for example if there is no return policy from the company side in that case marketing guys objective would be that I should achieve the target maybe on cash on the credit.

So, he may agree on any kind of the absurd credit conditions imposed by the distributor or by the retailer or maybe sometime by the customer. It is up to him that any kind of the conditions you can accept any kind of the credit period he can give any kind of the say loading factor he can apply on that and you can say that ok this much of the sales you this much of the material you buy from us on cash and the remaining you buy from us on credit and then sell that in the market.

I will give you this much of the credit period I will be loading your sales at this much of the loading factor because nothing is in the black and white there is no return credit policy. So, this kind of the problems come sometime the marketing people in the in the lust of achieving the target and quickly achieving the target what they do they extend unlimited credit we say unrealistic credit to some of the distributors and when the material is passed on to the distributor and further sales in the market part of those become the bad debt.

Because distributor's intention was not to pay 100% sale proceeds back to the company. So, just avoid this kind of situation sometime the loading factor is lesser. So, just to avoid this kind of the problems what the company should do? Company should have a clear cut written Credit Policy so that every sales guy every marketing guy has to follow those terms and conditions and he has no liberty to say extend any kind of the credit on any kind of the terms and conditions.

He has to communicate the credit policy of a company to the distributor or to the customer and the customer of the distributor has to agree of that. Because if there is no liberty there is no laxity provided to the marketing guy or the sales guy. In that case he has to work within that given Framework which is in the black and white which is in writing. So, this the first and the foremost requirement for the company that they want to sell on the credit.

They can sell on the credit no problem because nobody can sell under percent of the sales on cash back credit has to be on at some acceptable terms and conditions. It should be useful for the buyer also but it should be a beneficial proposition for the seller also. And for that we should have a written credit policy and the marketing staff, sales people should not have the liberty to say agree upon any kind of the terms and conditions with the buyers and then the risk the sales collections of the company.

So, for that there is a need for the written credit policy this is a very important requirements. So, how to design that written credit policy there is a Framework quantitative Framework for that so I will discuss that Framework with you maybe in the next class. It is a very interesting framework and we can work out a score with the help of that framework that every distributor customer or any other channel of distribution maybe retailer.

Looking at the probability of say the sales can be made to him payment will be made back by him the profitability the company will earn after making those sales or if there is a problem in collection of those sales from that customer from that channel of distribution channel how much loss the particular company is going to make what is the probability of that loss and what tax expenses the company has to make in collecting those the credit sales.

By taking into consideration all these factors there is one policy written policy can be can we can be created and the score can be worked out while dealing with each and every individual channel member or the customer and if that channel member of the customer touches the score or cross is at score then only the credit will be granted otherwise if it is less than that then no credit will be granted to the customer or that number of the channel of distribution.

So, how to work out that score and how to move towards having a written credit policy all that has many other things also I will discuss with you in the next class, thank you very much.