Working Capital Management
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Lecture - 12
Working Capital Requirement Assessment - I

Welcome students. So in the previous class we were talking about the operating cycle and that too about the weighted operating cycle. So weighted operating cycle we learnt about that as compared to the simple operating cycle or the non-weighted operating cycle it is better to calculate or to work out the weighted operating cycle or the duration of the weighted operating cycle because we should give the relative importance to the say different stages of the production process or at the different stages of the production process.

Raw material because it constitutes the largest part of your total cost of production so it should be say assigned more importance than work in process say only constitutes the raw material as well as half of the processing expenses so comparatively the same importance and then to the other stages. So just to make improvement over the simple or the non-weighted operating cycle in the theory experts have dwelt the operating cycle which is far more improved.

More scientific and more supportive of the say assessment of the working capital requirement the concept of the weighted operating cycle has been developed as I told you in the last class that it is better to use the weighted operating cycle as compared to the non-weighted operating cycle. We discussed in the class, in the previous class that how to calculate the weighted operating cycle.

I discussed with you theoretically even some formulas also that how what is the way to calculate the weighted operating cycle so what we have to do as we have seen in the class, in the previous class that you have to multiply the duration at the different level or the different durations maybe Drm that is duration of raw material or Dwip or duration of the finished goods or duration of the accounts receivables as well as accounts payable with the weights with the respective weights and how to calculate the weights we have already discussed that.

And I have say explained to you that how to calculate the weights. So we have seen there that for calculating the weights we take the selling price as the common denominator and then against the selling price we calculate the respective weights for the different stages.

So in that case when we were talking about the selling price as the common denominator we have seen that say accounts receivable accounts payable as well as the weight of the say your raw material stage is concerned that is the weight to be given to the Drm is the same with the weight to be given to the say at the accounts payable because accounts payable appear in the balance sheet of any company because of the purchase of the raw material.

When we purchase the raw material on credit so we have the accounts payable. So it means the what is the amount of the accounts payable and what is the raw material if the say the total raw material is purchased on the credit. Normally companies purchase the raw material, they do not pay in cash for the purchase of raw material. So when they buy it on the credit we have to see that how much material is purchased and how much accounts payable have appeared in the balance sheet.

Because it maybe the time period which may defer. If the company is not having a very good rating in the market so the credit period allowed may be less. But if the company has acceptable rating in the market then the credit period can be as per the market say average or the as it is being given to the other firms in the industry it will be given to all the firms. So we assume that the raw material is being purchased on the credit.

And accounts payable appear in the balance sheet because of the raw material so in that case we have to give the same weight to the raw material stage that is Drm and to the Dap. So we have learnt in the class that how to calculate the weights for the different durations. Now we will do a problem and with the help of that problem we will understand that what is the way to calculate the weighted operating cycle or what is the length of calculating the weighted operating cycle.

So if you look at his problem which is we are now at the problem number 2. Problem number 1 we have done in the previous class and it is the problem of the simple operating cycle. It was not

a weighted operating cycle but now if you talk about the say problem it is the problem of the weighted operating cycle and we know it that we need 2 informations. One is the information about the duration and second information we require is about the weights.

So if you look at this problem problem number 2 say it is written here that calculate the weighted operating cycle of RCW Limited from the following information or the information given here as under. So we are given 2 kind of information here. One part is done. We are not to do this part. It is already given to us. Say that is the duration part. See we are given the duration of the Drm that is given.

The raw material duration is given to us means time period required to convert the raw material. Raw material remains as raw material in the warehouse. So that is the duration which is already given to us. We are not to calculate this duration which is 36 days. Then WIP duration or the time period for how much time work in process remains as the work in process that is also given to us that is Dwip that is 28 days.

And duration of the finished goods is also given that is 12 days. Duration of the say accounts receivables is also given to us and that is 36 days and duration of accounts payable is 24 days. So it means first part is given to us. We are not to calculate these durations ourself and we have to go for the second part and second part is the calculation of the weights. So we know that how to calculate the weights and for calculation of the weights we have to now use the information given here.

So we are given the information like the cost and the price structure of the company are cost of raw materials and stores etc. per unit is Rs. 60 and processing cost per unit is Rs. 36 and selling and administrative and financial cost per unit is Rs. 12 and selling price per unit is 120 Rs. So this is the total.

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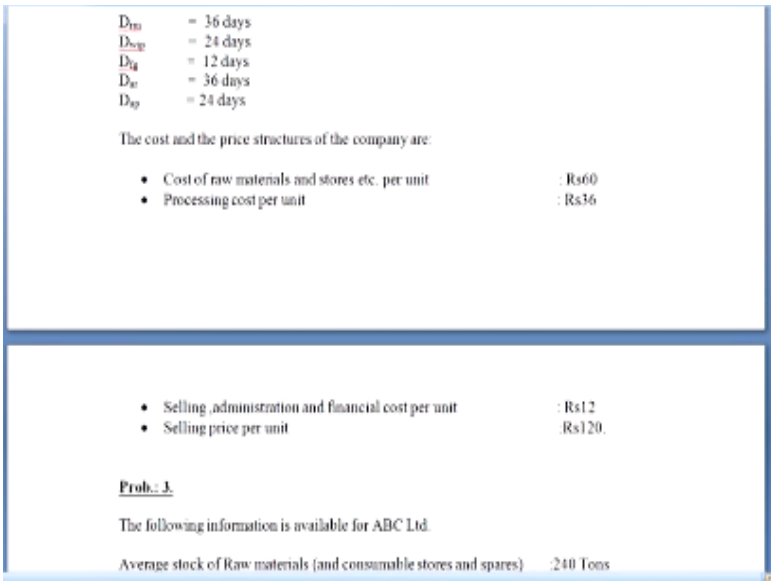

So what is the total cost it works out as this works out as 60 + 36, 96 then 90 means 108 is the cost. So we are selling the product at 120 Rs. It means the remaining is the margin of the firm. This is the estimated cost. now we have to take the weights against the selling price so we have seen the formulas and the way the process how to calculate the weights in the previous class and now we will calculate the weights here.

So we are doing it that how to calculate the weights so let us say start doing it. Say for example we talk about the information which is given to us and we have to now calculate the first way that is called as W this we have to talk here as that say Wrm, weight at the raw material stage.

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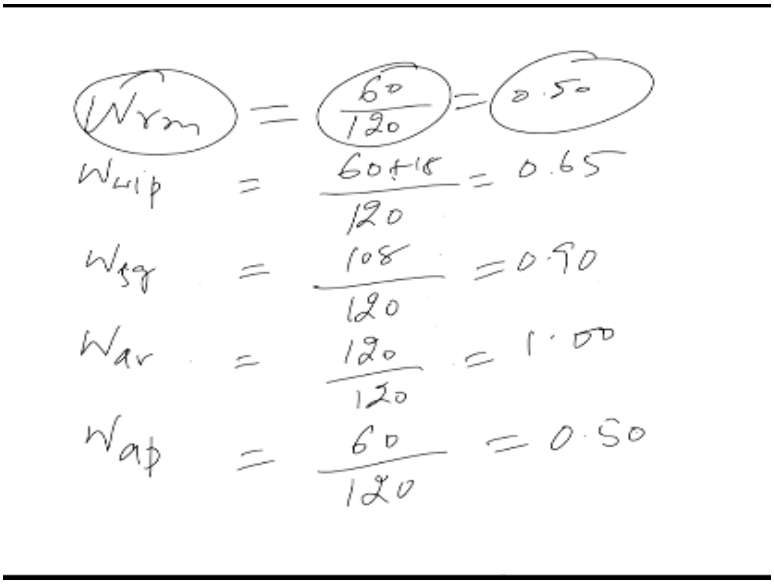

So this is, how to calculate this? What is the cost of raw material that is given to us was. If you look at the cost of raw material that was given to us is that is say 60 Rs. the cost of raw material processing cost is per unit is 36. So here I would like to remind you that when we calculate the weight at the raw material stage that is Wrm, we take the raw material as to be divided by the selling price being a common denominator.

But for calculating the WIP work in process you have to take the total cost of raw material but the processing cost has to be taken as half because at the WIP stage the product is not fully finished. It is half finished and it will be taken to the next stage or stages and then by incurring some more expenses it will become the finished product. So in the normal case if nothing is given to you in the question or maybe tomorrow in the real life.

So the standard rule of thumb is that we have to take the out of the total processing cost we have to take the half of the processing cost not the full. So here for example we have the 60 Rs raw material cost for calculating Wrm we will take this 60. But for calculating the WIP we will take that is 60 plus half of this is 18 that is 60 + 18 to be divided by the common denominator that is the selling price that is 120.

And then when you calculate the weight at the next stage that is the Wfg weight for the finished good so at that level you have to take the processing cost as full. So it will become that is your 108 and to be divided again by the selling price as the common denominator. So let us calculate these weights and when we calculate these weights so we have to start with the first weight and the first weight is that is Wrm weight of raw material.

So what is the cost of raw material, we have seen here is that is 60 divided by the here the selling price is 120 so weight is that is 0.50. This is the weight of raw material. Then we go for the second weight. WWIP and at this stage as I told you, you have to take the 60 + 18 is the half means the half the processing cost and then is the 120 so you will be now calculating this. So this works out as how much that is 65%.

Means 65% of the selling price is at the WIP stage we have already incurred and then we calculate the next weight that weight is Wfg duration of the or weight of the finished goods. So in this case when you calculate the weight of the finished goods this is 108 divided by the 120. So now we have taken the total finished cost processing cost that is raw material and what is the total finished cost is that was taken as if you look at the problem here we have taken the finished goods.

Cost is 108 so let us go back and see here how we have taken the 108. I have taken the raw material is 60, processing cost is processing cost is 36. So we have taken 60 + 18 at the WIP stage that is say you can say 78 to be divided by the 120 so it works out as 65% or 0.65 and finished goods stage is we have taken the 108. Now you will be wondering why I have taken the 108 here to be divided by the selling price.

See processing cost we have to take here is that is full processing cost 60 + 36 that is 96 and after that the next set of expense is selling, administration, and financial cost per unit. So if you take this head normally, normally see selling and financial cost is not the cost of finishing the goods. It is not required. It is the other cost.

If you recall the cost sheet when we prepare the cost sheet for calculating the cost of production cost of goods sold or cost of production we take into account your direct overheads that is the material, labour, and direct expenses and then we take the other overheads and the other overheads are say your administrative overheads, only administrative overheads because we need the support of the administration for going for the production process.

Because if the purchase of the raw material has to be there office people are also involved. So we account this cost as the part of the cost of production but not the selling and the financial cost. Selling cost is after the cost of production that maybe the part of the cost of sales but not cost of production. So we should normally while calculating the say weight at the finished goods we should take only the processing cost as full and the administrative cost again as full.

But since in this case, in this problem this cost is not given to us as a separate component. We are given selling, administration, and the financial cost per unit. So it is very difficult to segregate this into 3 parts. So we do not know that how much is the selling, how much is the administration, and how much is the financial cost. So what I am doing here, I am taking this total cost as the administrative cost because it is not a very big amount.

And looking at the importance of the problem as well as the working out of the weighted operating cycle we are taking this cost as the administrative cost or as full. So I have added up the marginal cost, then the processing cost, and the administration cost which should be taken in principle as administration cost and if you are given separately for example all the 3 costs are given to us very clearly separately that you are given the administrative cost, you are given the selling cost and you are given selling distribution cost, and you are given the financial cost.

So only take the administrative cost and you simply exclude the selling as well as the financial cost that is not to be the part of the cost of production. So administration we are taking and in this problem we are assuming that entire cost is the administrative cost maybe the selection of selling and the financial cost is very small so which will not impact your say calculating the weights.

So when we are calculating this the weight of your finished goods so we will be taking into account here that is the Wrm we have calculated that is half that is 0.50, Wwip is 60 plus your 18 that is 0.65. At Wfg stage we have taken 108 divided by 120 and the weight works out here is that is the say how much this is 90%. This weight will be 90%. So it means this is the 0.90.

We have taken this weight here and now we have to calculate the next weight that is the weight ar that is the weight for the accounts receivable. If you calculate the weight for accounts receivable so we are taking accounts receivable yes. Now when you calculate the accounts receivable we will be taking here at the selling price. So we have seen in the previous class that what is the formula of calculating the weight of accounts receivable?

We will be calculating this as the selling price divided by the selling price. Because accounts receivables include the profit also. Accounts receivables include the profit also. Now here I would like to say add something that see when we are talking about the here assessment of the working capital requirement. One school of thought in the theory you will find is some people will say that profit is not going to be invested by the firm.

Profit is not going to be invested by the firm. So why should we take into account the profit while calculating the accounts receivables. Why should we take the profit as a cost while calculating the accounts receivables. Because accounts receivable, because firm's funds are blocked to what extent. They are blocked on account of material. They are blocked on account of processing cost. They are blocked on account of the administrative cost. Our profit is not blocked.

And we are assessing the assessment is this assessment of the working capital requirement means how much investment we have to make. So profit we are not investing so why should we include this while calculating the accounts receivable. But see there is a another school of thought that accounts receivable or the profit when you talk about the profit that is also going to be the earning to the firm.

So it is treated or it should be treated like that though the profit is the result of the business operations, manufacturing and selling in the market but you assume that profit we are also going to receive the profit so you assume that profit is also invested in the business and when we are doing the business so profit is also the part of the total investment. Profit though it is a result of the business but it is a it is considered here as the part of the as a part of the total investment we are making here.

So for example if you recall when we prepared the balance sheet. In the balance sheet we show 1 item as say sundry debtors and sundry debtors are we are showing the sundry debtors at the selling price. We are not showing it at the cost price. Sundry debtors include the profit also. So it means if any debtor becomes a bad debt it is not only that we are not recovering the cost of

investment or the total funds we have invested in the business, we are not recovering the profit also.

So loss is the of both, cost as well as of the profit. So here for calculating the accounts receivable, for calculating the accounts receivable especially I am talking here is that we have to keep the difference in mind that when you are calculating the weights you will have to say take the weight that is the War for calculating War you have to divide the selling price by selling price and the weight will be 1.

However, when tomorrow in the real life when we will calculate the assessment of working capital requirement if we are given certain information which we will discuss in the next class so in that case what we will do? We will take the for calculating the investment we will calculate the accounts receivables at cost not at the selling price. But for the weight sake here only for the weight sake we are taking the say accounts receivable we are calculating.

Because accounts receivable we are not only while selling that product in the market we are not recovering the cost, we are recovering the profit also. So accounts receivables normally in the balance sheet are also taken at the selling price. So here also it has to be taken at the selling price. However, while calculating the investment part in the real life tomorrow we will take the accounts receivable at the cost price.

So it means here we will take the accounts receivable at the selling price and the selling price here is that if you talk about the selling price, selling price here is your 120. So 120 to be divided by 120 and it is going to the weight of the accounts receivable is going to be the 1. This is the the weight is 1. And now we have to go for the next weight that is the weight of accounts payable.

For calculating the weight of accounts payable we will have to take the same weight that is the say we have taken the weight for this thing that is the raw material weight and that is 0.50. So this will be again 60 divided by 120 and this weight will be again 0.50. This is how we are calculating the weights. So only for calculating the weights accounts receivables will be at the selling price.

But working out the accounts means investment on account of say working capital investment in the accounts receivables we will calculate that at the we will calculate that at the cost price. Here one more thing I would add here. For example you are asked that you have to assess the working capital requirement for a firm depending upon the different information given to us that is the duration given to us, investment to be made at the different duration, the total operating cycle duration is also with us, everything is with us.

So while calculating and means sorry and at the same time you are asked 2 things. One thing you are asked is that is to calculate the working capital investment requirements and second thing is to prepare the balance sheet also. So what we will do? While calculating the working capital investment requirements we will count the accounts receivables at the cost price. But while preparing the balance sheet while showing it in the balance sheet we will be showing it at the selling price.

Because in the balance sheet accounts receivables include the profit also. So some changes are here. So we are calculating the weight. Weights are available with us. Wrm is half that is 0.50. Wwip is 0.65. Wfg is 0.90. War is 1. Then Wap is the 0.50 right. so in this case we have learnt that how to calculate the weights and now we will move the next step to calculate the weighted operating cycle. For calculating the weighted operating cycle we will now that is what we are going to do here is that we are calculating the duration of the weighted operating cycle and this is duration of weighted operating cycle.

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$$D_{WOC} = W_{rm}(D_{rm}) + W_{wip}(D_{wip}) + W_{fg}(D_{fg}) + W_{ar}(D_{ar})$$
$$= 0.50(36) + 0.65(24) + 0.90(12) + 1.00(36)$$
$$= 18 + 15.6 + 10.8 + 36 = 80.4 \text{ Days}$$
$$D_{WIC} = D_{WOC} - (W_{ap} \times D_{ap})$$
$$= 80.4 - (0.50 \times 24)$$
$$= 80.4 - 12 = 68.4 \text{ Day}$$

So it is Dwoc that is the duration of the weighted operating cycle. So we know the formula that is how to calculate it Wrm multiplied by the Drm then plus Wwip, Wwip multiplied by the Dwip duration at the weighted operating cycle. Then it is the plus Dwfg multiplied by the Dfg duration at the finished goods stage and then we have to go for the say duration W. We are multiplying with the way so W accounts receivable, War multiplied by the Dar.

So this is going to give us the total duration of the weighted operating cycle. So we know it that how much information we have and if you look at the information we have got the weights. So weight at the raw material stage was 0.50 and to be multiplied by the duration and duration is given to you and that duration is 36 then plus War is that is 0.65. We have calculated the weight 0.65 multiplied by the duration of Wwip. This is the 24 days.

For 24 days the material remains at the processed stage. Then is the next thing is the finished goods. Finished goods was 90. So it means it is 90%. So it is 0.90 multiplied by how much is the duration of the finished goods 12 days. It remains at the finished goods stage for the 12 days and then we have to go for it plus 1 multiplied by this is 36. So we are taking the duration of the accounts receivable is 36. It means this firm is giving the say time to the credit buyers 36 days.

So if you take this duration as 36 days it means this is worked out. So how much is the duration here we take 18 then we take here is the that is 15.6. Then we take it here as the 108 that is 10.8.

Then next is the plus 36. So we are taking the total amount. So how much it works out as total duration is 18 and that is 33.6. Then it is 30, 43.6 and 44.4 and then is 44 and 36, 80.4. So total duration of the weighted operating cycle is how much, 80.4 days.

This is the total duration of the weighted operating cycle. This is the this is how we calculate the weighted operating cycle. Now we calculate the duration of the weighted cash cycle. So for calculating the duration of the weighted cash cycle so we have the duration of the weighted operating cycle minus we have the we have to subtract here something that is the Wap and multiplied by the duration of the accounts payable. So you have to subtract this.

If you subtract this from this so it means we have got this duration of the weighted operating cycle is 80.4 minus how much is the weight of the accounts payable. This is the same weight that is 0 point you can say 0.50, 0.50 multiplied by what was the duration of the accounts payable it was given to us was 24. If you take this and solve this so this works out as how much? 80.4 minus this is 12. So this will be how much 68.4 days.

This is the duration of the weighted cash cycle. Means your total funds will be blocked in the say process right from the cash to be converted into cash, the whole process will be requiring the total period of 68.4 days or you can say 68 days or 69 days or something around this. So 68.4 days we have calculated here. So this is how we calculate the weighted operating cycle and this is more you can call it as scientific or acceptable or useful.

Because we are say providing the weights at the different stages. Half of the weight we are giving at the raw material stage because it is a bigger chunk of the total cost of production or maybe in the total selling price you talk about your major component is the raw material. Then if you talk about the weight of the work in process it is 65%. We are giving the weight as 65% because we are adding more cost at this stage Wip and weight becomes 90%.

Because the finished goods at the finished goods stage total investment increases. Means at these 3 stages or even the fourth stage that the weight is 1. All the 4 stages there is outflow of the funds. There is no inflow. So we are investing the funds now. So we have to calculate that

duration that for how much time we are investing the funds so we are taking this so weight is 50% in this case 65, then 90 and then 101 that is 100% .

That is at the accounts receivable stage and for the accounts payable we have given the same weight as in case of the raw material because accounts payable appear in the balance sheet because of the raw material purchase of the raw material. So in this case you will be knowing that how to calculate the weighted operating cycle. So we should normally use the weighted operating cycle which is more useful, more scientific, and it is going to give us the better results.

Here one point of caution I would like to give you that this duration of the operating cycle, this duration of the operating cycle is only indicative. This is not perfect. Only we are getting a broad estimate that the weighted operating cycle if the accounts payable are allowed for 24 days in that case can be of the order of or of the duration of 68 days. But this is indicative I am telling you. In the real sense this operating cycle maybe of 70 days. It may be of 60 days.

But it will revolve around this 68. So you do not consider it as a 100% true results that the certainly it is going to be 65. After getting this figure with the help of this weighted operating cycle process we will have to make the internal adjustments. For example we are assuming that raw material we are assuming here that the duration at the raw material stage is 36 days but we can actually we can reduce this duration also or it can go up also.

Similarly, work in process normally it is the duration is 24 days but that will happen only if the power is regularly available or the water is regularly available, all other inputs are regularly available. Then it is fine. But if these inputs are not easily available or sometimes there is a disruption, there is a unforeseen situation. Sometime there is a power cut and we are expecting that the power cut will be only for say 6 hours. We will have the power for 18 hours.

Maybe because of change of season, in summer the power cut is more. So firm is getting the power only for 12. So in that case this time period will increase. Raw material we are expecting it will be easily available. But sometime there is a shortage of the raw material. So if the raw

material is not available or if the power is not available. Similarly, the other finishing or the say other expenses processing expenses are not or the items are not available.

In that case this operating cycle maybe of the more duration. So this this how we are calculating here with the help of this formula or this process this is only indicative. For finally arriving at the duration of the operating cycle what you have to do is or what the firms normally do is they make the internal adjustments after getting this figure. So it is very important to get the to do the internal adjustment after getting this figure.

Now finally, for say once we get the duration of the operating cycle how to now make the say how to assess the working capital requirement the simple and the best way to do that is that we have a formula here that finally the say working capital requirement assessment, that is working capital requirement assessment.

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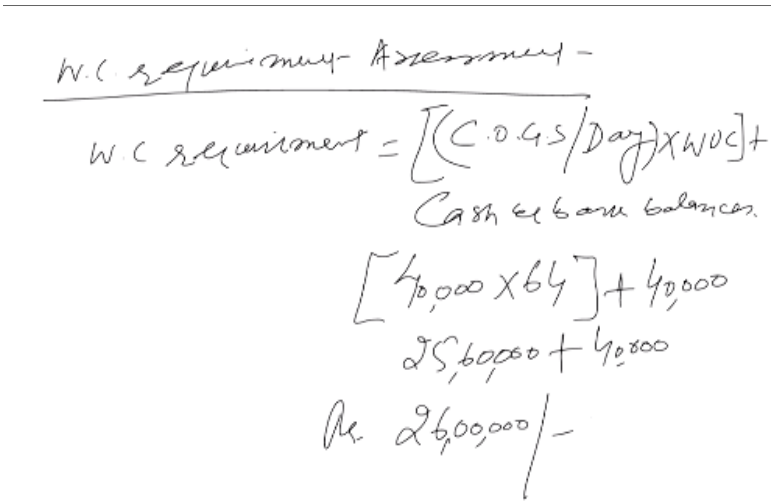

Working capital requirement assessment. So if you have to say assess the working capital requirement so working capital requirement can be assessed with the help of this formula say working capital requirement is equal to what is the formula here? Formula is that is COGS cost of goods sold per day, cost of goods sold per day multiplied by we have to have something here that is multiplied by the weighted operating cycle WOC weighted operating cycle.

And in that case we have to close the bracket plus the amount of the cash and bank balances. Cash and bank balances, cash and bank balances. This is the formula here. So now with the help of this cost of goods sold per day multiplied by the weighted operating cycle and cash and bank balances. If you look at this formula what we have to find out here is we going to find out the working capital requirement. So we need the cost of goods sold per day.

That will be easily available to us that what is the annual cost of goods sold divided by 365 so per day cost you will be able to find out and then weighted operating cycle duration we are able to find out that is how we have just calculated and plus cash and bank balances. Apart from the investment we are making in the raw material in the work in process or in the finished goods or in the say accounts receivable firms keep some amount of cash as cash and bank balance right.

So we have to add up some margin for that and while adding up the margin for that what you have to do here is that you have to say add some amount of the cash and bank balance which the firms will be requiring to keep in the form of the cash not to invest in the raw material in the processing cost or in the accounts receivable. So for example we assume some figures here. Say your for example cost of goods sold per day is how much is 40000 right.

Cost of goods sold per day is 40000. So it is cost of goods sold per day is 40000. So we take it as 40000 and multiplied by weighted operating cycle. We take the duration of. We assume the weighted or duration of weighted operating cycle is 64 days. So this is going to be some amount and plus cash and bank balances. So if you talk about the cash and balances, bank balance we need to keep say for example 40000 as a cash.

So what is going to be now the final working capital requirement if you are multiplying the 40000 by 64 days. This is the cost of goods sold per day. Cost of goods sold per day is for example your cost of goods sold is whatever the total amount annual divided by the 65, 365 or 360 days and multiplied with the weighted operating cycle. So if you work it out this works out how much.

This is 25 lakhs and 60 thousands plus cash at bank balance requirement is how much? This is the, the requirement is 40000. This is our total requirement 40000. So total requirement, working capital requirement for thif firm is going to be how much that is 26 that is 26 lakhs. So we have worked out the total requirement is that is 26 lakhs rupees, 26 lakhs this is our total requirement which we have worked out.

So you have to have certain information means till now what we discussed? For calculating the working capital requirement or assessing the working capital requirement first of all you should have the duration of the different levels of your material will be raw material, then WIP, then finished goods, and then accounts receivables and accounts payable. After that you should have the information of the cost that what is the cost of raw material, what is the cost of processing.

What is the say cost of you see the other administrative overheads. So this information and then the total selling price. So with the help of this we will be able to calculate the duration. We will be able to multiply the duration with the weights and once you calculate the this weighted operating cycle then the total annual cost will be available to us and that will be divided by 365. So it means we will be able to find out the COGS.

So COGS multiplied by the weighted operating cycle and the cash requirement which we want to keep as cash if it is available with us so in that case the total working capital requirement can be assessed which works out as 2560000 + 40000 we want to keep as cash. So total requirement is 26 lakhs. So this is how we assess the working capital requirement and we will be say calculating in the real life also the industries the firms in the real life also they also calculate the working capital requirement this way.

So it means it is a very simple process, quantitative process. But the caution here is the duration of the operating cycle which we have calculated that is the weighted operating cycle you have to adjust accordingly because the number given by this formula is not the final. Internal adjustments are required and if other information is available with us then the total working capital investment requirements can be worked out and the firm can be more smooth, more comfortable.

They would not be keeping high amount of current assets, not a low amount of current assets. So firm will be avoiding the risk also because of the optimum liquidity and they will be having the optimum level of current assets also. So the profits will also be as per the estimates or as per the requirements of the firm and means overall a balanced scenario can be expected. So this is all about how to assess the working capital requirements.

So I will stop here in this class. In the next class we will do some problems, some problems where we will learn how to calculate the working capital requirement of the firms if some information with regard to duration and the financial investment part is also given to us then how to work out the working capital requirement of the different firms. Thank you very much.