# FINANCIAL MANAGEMENT (PART-9) <br> WORKING CAPITAL MANAGEMENT (PART 3) 

## 1. INTRODUCTION

Dear Students Welcome to the lecture series on financial management. Today in this lecture we shall cover the topic working capital management. Under this lecture, we shall learn the computational aspect of various topics related to working capital i.e., computation of working capital by estimating current assets and current liabilities and the computation of operating cycle.

The objective of this lecture is to understand the conceptual framework of working capital management. We shall learn how to compute the operating cycle using the defined formulas and to ascertain the number of days of the operating cycle. We shall also learn how many times operating cycle will be run in a year. We shall learn the estimate of working capital by estimating current assets and estimating current liabilities using the formula so that we can ascertain the exact amount of working capital required. This computation shall be based on average basis. It shall never be computed on a specific point of time.

## 2. COMPUTATION OF OPERATING CYCLE

We shall learn how to compute operating cycle
In our previous lecture we have learnt concept of operating cycle and the length of operating cycle to be computed under trading concern and manufacturing concern; Using those formulas which we have learnt in our previous lecture we shall compute the operating cycle and we shall also compute how many operating cycle are to be run in a year.

Let us see the practical example on the screen; The figures for raw material, work in progress and finished goods are given as well as average raw material, average Work in progress and average finished goods are given. We have to ascertain the period i.e., average storage period of raw material, average Work in progress holding period and average finished goods holding period and also the credit allowed to the debtors. Fortunately, this is given in the question that the credit allowed to debtors is 45 days. And the credit period which we have received from supplier is also given as 30 days, so let us start doing the computation.

| Particulars | Amounts <br> (Rs.) |
| :--- | ---: |
| Raw Material consumed during the year | $6,00,000$ |
| Average stock of Raw material | 50,000 |
| Work-in-Progress inventory | $5,00,000$ |
| Finished Goods | $8,00,000$ |
| Average W-I-P inventory | 30,000 |
| Average Finished goods held in stock | 40,000 |
| Average collection period from debtors | 45 days |
| Average credit period availed | 30 days |
| No of days in a year | 360 days |

First of all we know that the Gross operating cycle $=\mathrm{R}+\mathrm{W}+\mathrm{F}+\mathrm{D}$
Then we have to subtract C from it, so we get the net working capital.
First of all we will compute R.
R means raw material storage period. It is computed as=

So average raw material consumed per day shall be computed as
Raw material consumed per year/ number of days in a year. We will assume Number of days to be 360
Raw Material consumed per day $=\frac{\text { Rs. } 6,00,000}{360 \text { days }} \quad=$ Rs. 1667

So the denominator will be 1667 and the numerator will be Rs. 50,000 because average stock of raw material is Rs. 50,000 . It will give us the storage period as 30 days.

```
Average Raw Material
```



```
    (in days)
    1667
```

Now we have to compute the W, W means work in progress holding period. It will be computed using formula

```
Average Work in Progress Holding
Period = Average Work in progress stock
(in days) Average cost of W-I-P per day
```

Or we can say,

```
Average Work in Progress Holding
Period = Average stock of Work in progress
    (in days)
    Average cost of goods produced per day
```

Again we have to find out the denominator in the days because question has given us the information of Work in progress inventory or cost of goods produced inventory in a year - i.e. yearly figure is given.

Average Work in Progress per day

$$
=\frac{5,00,0000}{360}=\text { Rs. } 1388
$$

Putting the figure of 1388 in denominator and the numerator to be Rs. 30,000 given in question we will find out the holding period of work in progress

```
Average Work in Progress Holding
Period = 30,0000
    (in days) 1388 = 22 days
```

Work in progress holding period is coming to be 22 days.
Third one is $F$.
F denotes finished goods holding period. Let us see its formula first.

$$
\begin{aligned}
& \text { Average finished goods storage pd= } \begin{array}{l}
\text { Average stock of finished goods } \\
\text { (in days) } \\
\text { Average cost of goods produced per day }
\end{array}
\end{aligned}
$$

So again, we have to take the figure of year and divide it by 360 to get the per day figure. So $8,00,000$ is given as the figure of finished goods per year so we have to divide it by 360 we will be getting 2,222

```
Average cost of goods produced per day = 8,00,000
    360 = Rs. 2.222
```

So keeping the figures in formula, it will give us the figure as 18 days

```
Average finished goods storage pd= 40,000
    (in days) 2,222
    = 18 day
```

And Debtors collection period is already known to us i.e., 45 days.
Adding $30,22,18$ and 45 we are getting entire figure as 115 days. These 115 days is the gross operating cycle period. Now we know that from gross operating cycle we have to subtract C .

C means credit period which is given by suppliers to us. And we know this period is 30 days.

So $115-30$ days will give us the net operating cycle period is 85 days.

Now these 85 days is showing the figure of net operating cycle.


## AVERAGE RAW MATERIAL STORAGE PERIOD

AVERAGE WORK IN PROGRESS HOLDING PERIOD

22 DAYS

AVERAGE FINISHED GOODS HOLDING PERIOD

18 DAYS

## AVERAGE DEBTORS COLLECTION PERIOD

```
4 5 \text { DAYS}
```


## GROSS OPERATING CYCLE

LESS CREDIT AVAILED FROM SUPPLIERS

Now we have to find out number of times this operating cycle has to run. There is a formula

$$
\text { Number of operating cycle }=\quad \frac{\text { No. of days in a year }}{\text { Net operating cycle }}
$$

So the answer will 360/85= 4.2 days
With this we have learnt the method of computing operating cycle and number of operating cycle which will run in a year.

## 3. ESTIMATION OF WORKING CAPITAL

We will learn the method of estimating working capital by estimating current assets and current liabilities. We know that working capital is excess of current assets over current liabilities. We have to do this estimation on average basis. So we need to follow a format to compute the net working capital

First of all in step one; we have to compute Current assets on estimated basis. And this all calculation will be based on cash cost basis. We will consider only relevant cash inflows and outflows.

Let us see this format

## Estimation of working capital

- Step 1
- Step 2
- Estimated current asset
-     - Estimated current liabilities
- Step 4

Add Safety Margin ( \% of Working capital)

- Step 5


## Total working capital

First estimation of current assets then estimation of current liability Then we have to subtract current assets and current liabilities so excess of current assets over current liabilities will give us the figure of working capital we can say it is net working capital. No we have to load safety margin on it. The safety margin will be a percent on working capital either it can be before adding safety margin or after adding safety margin.

Before and after will impact the calculation. After adding safety margin to net working capital we will compute the Total working capital.

## Summarize it

Current assets on estimated basis - current liabilities on estimated basis = Net working capital + the safety margin on a specific percentage as suggested by management, hence we will get total working capital.

Now step wise step we have to find out each segments i.e., estimated current assets we have to find out using suitable formula as have been drafted let us see how it goes on.

## 4. CALCULATION OF ESTIMATED CURRENT ASSETS

Let us learn the computation of current assets on estimated basis. Again we have to find out estimation of inventories, cash, and other expenses such as prepaid expenses whether it is factory overhead, administration or selling and distribution expenses.
We know inventories have three parts-

1. raw material,
2. work in progress and
3. finished goods

For each of these elements we have to find out estimated current assets or requirement of these inventories on estimated manner.

Let us see the computation of raw material see this formula on screen

## Stock of raw material

=Estimated Annual cost of raw material to be consumed
Average raw
X material
12 months/ 365 days
holding period

Similarly for work in progress is to be computed using the formula


We have to use 12 months or 365 days it will depend upon the holding period as given to us in the information

For stock of finished Goods


Cash in hand - will be as per the minimum requirement decided by the management policy then we have to add up prepaid expenses such as prepaid administrative expenses and selling and distribution expenses.

Hence, Stock of raw material, work in progress, finished goods, trade debtors, cash in hand and prepaid expenses shall form the value of total current assets.

We have to work out the method of computing this raw material with the help of example.

Stock of raw material has to be computed

| Budgeted Production | 60,000 units |
| :--- | :---: |
| Raw Material Cost per unit is | Rs.5/- |
| Raw Material Storage Period is | 2 months |

The solution will be

```
Stock of raw material = 60,000 units * Rs.5 * 2 months
    1 2
    = Rs. 50,000
```

60,000 are the units and Rs 5 is the unit price of one unit. So 60,000 multiplied by Rs 5 it will give us total value of annual cost of consumption of raw material and then we need to divide it by 12 and then multiply it by storage period i.e. 2 months. As months are given in question so we need to divide the annual consumption by 12 , so we will get the figure as Rs. 50,000

There is a little variation in the example

| Budgeted Production | 12,000 units |
| :--- | :---: |
| Raw Material required to produce | 2.5 kg |
| One unit | Rs. 4 |
| Raw Material Cost per kg. |  |
| Raw material storage period 2 months |  |

First of all we have to find out the consumption in kgs. Here 12,000 * 2.5 kg will give us the figure of $30,000 \mathrm{kgs}$.
We have to find out the estimated annual raw material it will be $30,000 \mathrm{~kg}$ *Rs. 4 so the annual raw material cost will be Rs. 1,20,000/-
We need to divide it by 12 . So it will give us the figure of Rs. 10,000/-

Now we need to multiply this 10,000 by average raw material storage period which is given as 2 months. So the final figure will be Rs.20,000/So this way, we have computed the estimated annual requirement of, estimated requirement of raw material using this formula.

## 5. COMPUTATION OF ESTIMATED WORK IN PROGRESS

Let us see the formula on the screen


We will learn this computation with the help of example

| Activity level | 60,000 |
| :---: | :---: |
|  | (in Rs per unit) |
| Raw Material | 5 |
| Wages | 4 |
| Manufacturing Expenses |  |
| (Including depreciation of Rs.1) | 3 |
| Administration overhead | 1 |
| Selling and Distribution Expenses | 2 |
| Production cycle $=1 / 2$ month. |  |

Solution
We have to estimate everything on Cash cost basis.
Depreciation of Rs. $1 /$-including in the manufacturing expenses has to be ignored. Instead of Rs3/-we have to take Rs2/- in finalizing the cost of goods to be produced

1. Units of Work- in-progress $=60,000 / 12=5,000$ units
$=5000 * 1 / 2=2,500$ units
Since 60,000 units is the annual units we will divide it by 12 , we shall get the figure as 5000 units

Since the production cycle is half month we have to do half of 5000 units so computed it will give us the figure as 2500 units

Calculation of Work-in- Progress
A. Raw Material(2500units*Rs.5*100\%) 12,500
B. Wages ( 2500 units* Rs. 4 *50\%) 5,000
C. Manufacturing Overheads (2500*2*50\%)

2,500
20,000

Now the most crucial point we are going to learn here in relation to degree of completion.

1. Inventory under work in progress shall be considered to be provided in the beginning of the year.
2. Expenses related to wages and other manufacturing expenses will be considered to be spread evenly throughout the year.

So the degree of completion for wages and other expenses shall be taken as $50 \%$ under work in progress inventories

Let us see further how wages are computed Wages will be 2500 units *Rs $4 /-$ *50\% because we have assumed that expenses are spread evenly throughout the year. It will be coming as Rs 5000/-
Manufacturing expenses will be 2500 units *Rs2/- * $50 \%$ it will give us the figure of Rs 2500 we have taken Rs $2 /$ - because we already know that depreciation is to be ignored so rather than Rs $3 /-$ we have to multiply by 2 and the degree of completion will be $50 \%$.
So $12,500+5,000+2,500$ they will give us the figure as Rs. $20,000 /-$ so work in progress inventory is coming as Rs 20,000/-

Let us learn discuss some very important formulas for computation of work in progress. They are related to physical units. If physical units are given how to compute it and if physical units are not given how to proceed ahead. So let us see these formulas on the screen

## Formula for

Work-in-progress Stock


## Formula for

Work-in-progress Stock

```
when physical umits are not given
```



## Formula for <br> Work-in-progress Stock

When physical units are not given
Annual

| Manufacturing <br> overheads$=$ | manufacturing <br> overheads |
| :---: | :---: |
| 12 months |  |$\times$| Process |
| :---: |
| period |$\times$| Degree of |
| :---: |
| completion |

So raw material, wages and manufacturing overheads will give us the figure of work in progress when physical units are not given.

Let us see the formula when physical units are given

> Formula for
> Work-in-progress Stook

When physsical umitis are given

Raw Material $=$ WIP (Units) $\times \begin{gathered}\text { Regree of } \\ \text { Dempletion }\end{gathered} \times \begin{gathered}\text { material cost } \\ \text { per unit }\end{gathered}$
WIP $=$ Work in progress

## Formula for

Work-in-progress Stock

$$
\text { Wages }=\text { WIP (Units) } \times \begin{gathered}
\text { Degree of } \\
\text { completion }
\end{gathered} \times \quad \begin{gathered}
\text { Labor cost } \\
\text { per unit }
\end{gathered}
$$

## Formula for Work-in-progress Stock

When physical unitis are given

Manufacturing Overheads

Degree of completion

Manufacturing overheads per unit

They will give us the figure of work in progress stock. These formulas we need to mind and for degree of completion if need to keep in mind that

If nothing is given we will assume raw material is issued at the beginning of the year. So $100 \%$ degree of completion will be applied and wages and overheads are assumed to be distributed evenly throughout the year. And so we will take the percentage of the degree of completion will be $50 \%$ In certain question the degree of completion can be defined i.e. $80 \%$ of raw material is used, $60 \%$ of wages and $40 \%$ of overheads. So as per the information given in the question we have to use the degree of completion, if nothing given then $100 \%$ and $50 \%$ can be used as degree of completion.

## 6. COMPUTATION OF DEBTORS

Another Dimension of computing current assets i.e., we have to compute the debtors amount.

The formula is

Debtors = Cost of Credit sales/ 12m or 365 days * Average collection period.

Let us see the practical example

|  |  |
| :--- | :--- |
| Raw Material | Rs. 5 |
| Wages | Rs. 4 |
| Manufacturing Overhead (including | Rs. 3 |
| Depreciation of Rs $1 /-$ ) | Rs. 1 |
| Administrative overhead | Rs. 2 |
| Selling and distribution expenses | Rs. 5 |
| Profit | Rs. 20 |
| Selling Price |  |

Credit period allowed to debtors 2 months
Cash sales 20\%
So we have computed the amount of debtors. So we have to go step by step

Step 1 Cash cost of sales per unit
=Rs 5+Rs. 4+ Rs. 2+Rs. 1+Rs. 2 = Rs. 14
Again the depreciation is excluded
Step 2 -Total cost of sales
(60,000 * Rs. 14/- = 8,40,000)
We have to find out the Credit Sales= it will be $80 \%$ of $8,40,000$, it is coming as=Rs. 6,72,000

Now we have the figures of both credit sales and debtors collection period. It is 2 months and credit sales is Rs. 6,72000. So dividing Rs. 672000 by 12 and multiplying it with collection period we can get the estimated debtors.

Debtors $=\underline{672000}$ * 2
12
$=$ Rs. 1,12,000

With this we have learnt how to compute debtors. Till now we have learnt to compute all the three segments of inventories i.e., raw material, work in progress and finished goods. Now the question comes about computation of cash in hand.

Cash in hands minimum requirement will be decided by management.
Thanks you.

