Working Capital Management

Dr. Anil K. Sharma
Department of Management Studies
Indian Institute of Technology-Roorkee

Lecture - 20
Inventory Management-Methods and Strategies

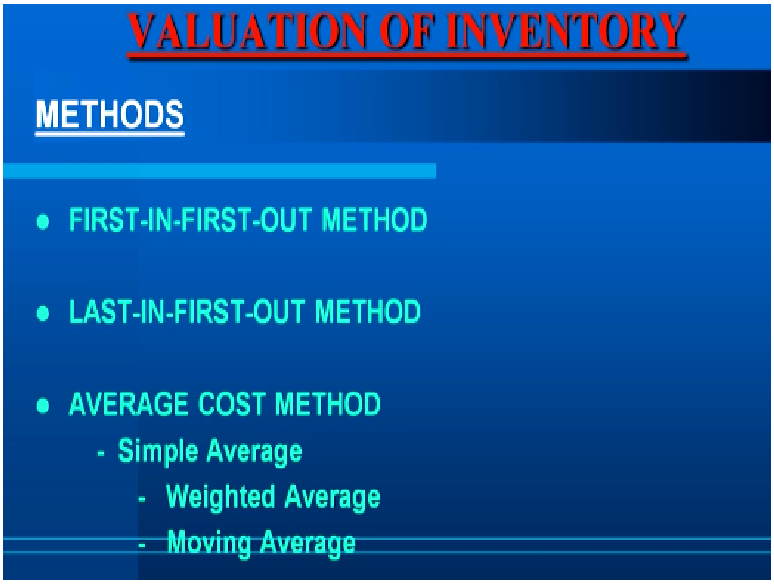
Welcome students. So we are in the process of inventory management. We are discussing the inventory management and now we will talk about the valuation of inventory. See since we are talking about working capital management so in that connection we are talking about or we are discussing the inventory management because inventory being one of the important and the first and foremost current asset.

So here is I am not going to discuss with you in any case the valuation methods of inventory that is sometime in the other subjects in some other area you can learn or you must be knowing about it that how to value the inventory and what are the different methods of valuing inventory. But in the passing reference we will have to say try to find out that how different valuation methods impact the management of inventory as far as the management of the short term funds or the working capital is concerned.

They make a difference. They make the impact because these are the valuation methods which sometime create the problem of excessive inventory or sometime the say shortage of the inventory. Sometime because of the wrong valuation methods it becomes very difficult for the firms to recover the investment they have made in the inventory. So let us talk about these different methods or discuss these methods but not in detail, just in the passing reference.

We have different methods of valuing inventory 5, 6 method or 6, 7 methods of valuing inventory are there.

(Refer Slide Time: 01:54)



First method is say for example FIFO method First-In-First-Out Method. Second method is Last-In-First-Out Method. So it means in the First-In-First-Out Method means things or the materials, maybe raw material or the finished goods which are purchased first they should go out first right which they are purchased first they should go out first and then similarly we talk about the Last-In-First-Out.

Sometime the goods which have been recently acquired or the inventory which has been recently acquired that should first go out in the market that should be first sold in the market. Then we can talk about the remaining inventory which is there with us in the warehouse or in the godown. So FIFO is the one method, LIFO is another method. Then we have average cost method. I will discuss with you that when in what situations these methods should be used.

And how they are impacting the working capital management. So but the third method is average cost method. In the average cost method we take the simple average, weighted average, moving average, different type of the averages of the different types of materials or materials acquired are the different points in time. They are calculated and then we calculate the average price method. Sometime we purchase the material at a high price.

Then we purchase sometime back material at the low price. So rather than following LIFO or FIFO they calculate the average of both the prices high as well as low and then we divide it by 2 and then we calculate the simple average. Sometime we calculate the moving average, weighted average. So different kind of averages are calculated and at that weighted say average cost method or by following the average cost method the inventories are valued. Then we have the say some specific identification method.

(Refer Slide Time: 03:34)

Some different types of materials like very expensive materials which are used in the small quantity but they are very expensive or some special identification marks are there on the inventory. So we can follow those methods also. Base stock method is there. Adjusted selling price method is also there. Extended cost method is also there. Different methods are there. I am not going to discuss these methods in detail.

But how these methods impact the inventory level and the funds blocked in the inventory how they are blocked for longer duration if we are not able to manage these say inventories or the different type of inventories properly. So it means in that case the management of because of the poor management of inventory because of the poor valuation methods because of unsuitable valuation methods of inventory sometime the recovery of the funds invested in the inventory becomes difficult or at least it is delayed.

So now for example we talk about the First-In-First-Out Method, First-In-First-Out Method. Say for example we say we are in the process of rising prices in the market. We are in the process means currently we are feeling that the prices are rising in the market or prices are about to fall down in the market. We see that the prices are expected to fall down in the market. We can see that maybe because of the lack of purchasing power of the people or maybe because of very strengthened supply side, the prices may fall down.

So in that situation, in the expected falling prices state of affairs in the market, First-In-First-Out Method should be the method should be followed. Because for example we have acquired some inventory at high prices in the past and currently the prices are at the acceptable level but in the future the prices are expected to fall down. So in that case what will happen? The material which has been purchased at the high prices by the firm we would not be able to sell that at the same price if the price will fall down.

So it is always better and means advisable to follow the FIFO method First-In-First-Out Method so that when we have purchased the material at the high price and the prices are expected to go down so it is better to take it out as early as possible so that the firm’s investment is recovered and firm’s profitability is not negatively impacted. Last-In-First-Out, in this case also when we talk about Last-In-First-Out, so it means the, if the prices are rising now currently we are in the state of fear that the prices are rising in the market.

Or the say prices for the finished goods are rising in the market. Similarly, the prices for the say raw material are also very high in the market. So we have purchased the raw material today. So it is better that you purchase the raw material, process that immediately and convert that into a finished product and sell it immediately in the market. That is Last-In-First-Out. Latest purchase should first go out in the market because it is a rising trend.

It is a inflationary trend in the market. If this inflationary trend gets reversed then what will happen? We purchased the material today at the high price and if the prices fall down in that case we would not be able to recover the investment in the made in the inventory. So different methods are followed depending upon the market trends or the market situation or the pricing trends or the pricing situation.

We have different kind of the trends in the market and our objective should be that whatever the investment is made in the inventory that should be easily convertible into cash, quickly converted into cash and convertible into a cash in a profitable proposition rather than losing something out of that investment. So different methods we are following and we are using. Now you see that what are the important say factors that impact the choice of the method.

Size and type of the organization. See when the organization is very large they are manufacturing the quantity or the product in a large quantity in the bulk in that case a minor change in the pricing of the product because of the pricing or change in the prices of the material which will impact the change of the prices or the prices of the finished product in that case a minor change will affect the firm seriously, negatively.

But if it is say for example if the firm is manufacturing the multiple products right firm is manufacturing say 10 different products and the prices of material of the one product which is not in very large supply or which is not having a very huge demand in the market it is one out of the 10 or maybe the one or the say you can call it as having the smallest market share or smallest performance in the overall portfolio of the product portfolio of the firm.

In that case you can choose any method because that will not impact much. But if the size of the organization is large and if they are manufacturing one or two products only, in that case a minor change, a negative change in the prices of the raw material if we have purchased the material at the high price and if the prices of the finished product go down then the firm will be badly hit. So we should try to avoid that situation.

Similarly, you talk about the state of the economy. I just discussed with you. In case of the inflationary situation we should follow the LIFO method Last-In-First-Out because it is inflationary trend. We are buying the raw material today at the very high price. So that should be immediately sold in the market so that whatever the investment you have made in the inventory by buying it at a high price that is immediately recovered.

Otherwise if the trend changes and if the economy moves from the rising trend to either saturation or if it starts falling down moves to the declining phase of the cycle economic cycle in that case it will be very difficult for the firm to recover the funds invested in the inventory which is purchased from the market at the price when there was a inflationary trend and the prices were rising; so economic state of economy is also impacting the choice of the method.

Industry practice. Sometime say there are the standard industry practices that some firms follow the LIFO method, some firms follow the FIFO method. For example if there is a any firm who is manufacturing the say the finished product based upon the agriculture products. The raw material of the finished product means the finished product coming out is from a raw material which comes from the agriculture sector and that production is seasonal.

The acquisition of the raw material is seasonal. So normally in those kind of the firms, in those kind of the companies, in those kind of the organizations they follow the FIFO method, First-In-First-Out. Because if they do not sell the product which has been acquired first or long back then the quality of that product maybe even after finishing or converting that into the finished products goes down.

So because the raw material's nature is like that that its obsolescence is very fast, is very quick so better it is the material which has been acquired first that should go out first in the market so that could be the one reason. Similarly, the tax regulations and implications. See for example the announcements in the budgets. When the budgets, when the government budget has to come, normally it comes in the on the first February from the previous year onwards.

Now the government has started announcing the budget on the 1st of the February. So everybody, every company, every firm expects some changes in the tax and regulations in the prices as well as the say overall conditions changes in the tax conditions which are affecting the industry or the firms working in a particular industry or particular area.

So they feel that if the tax level or the tax rates go up in that industry so they would like to sell maximum with their production which is say produced in the past so that their profitability is not taxed beyond a level. But if they are feeling that the tax is not going to have much impact upon their performance or their product so they can follow any kind of the method of inventory. And similarly, you talk about the tax effect and the valuation of the firm.

Certainly because if the firm is expecting the increase in the tax rates for a particular industry or for the particular product in that case what will happen? If there is a upward change in the tax rates is expected then firm would like to sell maximum that inventory which has been manufactured at the low cost and is sellable at the high price so that before the tax rates change upward or they are revised upward maximum profit is pocketed and lesser amount of the tax is paid.

So accordingly the valuation will be done and consistency. Sometime firms remain consistent. Once they are following LIFO, the follow LIFO. If they are FIFO, they are following FIFO they remain consistent with the FIFO or sometime the average cost method. So any of the methods can be chosen by the firms, by the different firms.

Sometimes some changes have to be made in the valuation methods depending upon the changes in the economy or in the economic structures of any country but that is not a regular phenomena. Once in a while that kind of the things can be done. So different factors like the type of the product we are in, type of the market we are in, type of the customers the firm is serving, all these factors impact the inventory valuation.

And finally the profitability coming out of that manufacturing their product and selling that in the market. So accordingly the valuation methods are selected, adopted by the firms and ultimately the objective is that the inventory should be properly managed. Funds investment in the inventory should be recovered at the say fastest possible extent and profitability, financial cost, and investment in the inventory is properly managed and recovered as early as possible. Now you see that we have a table here and we have different methods of valuing inventory.

(Refer Slide Time: 14:14)

DIFFERENT INVENTORY METHODS

Particulars	FIFO	LIFO	Sim. Avg.	W.Avg.	Mov.Avg.
Op.Balance	1500	1500	1500	1500	1500
Add. to Invent.	11,490	11,490	11,490	11,490	11,490
Stock for Sales	12,990	12,990	12,990	12,990	12,990
Less: C. Stock	2685	2625	2605	2600	2674
C.O.G.S.	10,305	10,365	10,385	10,390	10,316
Sales	20,000	20,000	20,000	20,000	20,000
G/P	9695	9635	9615	9610	9684
Less: Ind. Exp.	2500	2500	2500	2500	2500
PBT	7195	7135	7115	7110	7184
Less: I.T. @ 40%	2878	2854	2846	2844	2874
PAT	4317	4281	4269	4266	4310

See we have LIFO, we have first method is FIFO, LIFO, simple average, weighted average, and the moving average; 5 methods are there, we have seen here. So when you talk about the valuation or the price of the stock or the say the stock which is shown in this balance sheet or you can call it as in this profit and loss account not balance sheet. In this profit and loss account if you see the valuation of the material or the inventory you see that we have opening balance of the material.

Then add to the inventory we have added to the inventory and stock available for the sales is given. This is 12,990. Less closing stock. Out of this total stock for the sales we are subtracting something to be kept in the warehouse as a closing stock and you see that the depending upon the method of valuation we have chosen the finally the cost of that material which we are showing here or you can call it as the value of the material we are showing in our profit and loss account credit side you see that the value is different. Under FIFO, it is 2685. Under LIFO it is 2625.

Under simple average method is 2605. Under moving average sorry weighted average method it is 2600. Under moving average method it is 2674. So it means when you change the method of valuation of inventory certainly there is a change in the value of the inventory and that impacts the profitability of the firm. That impacts the future sales of the firm. And that impacts the process of the recovery of the funds invested in the inventory.

So we have to be very careful that what kind of the product we are manufacturing. What kind of the customer we are serving. What are the expected say economic trends in the market. And our objective of recovering the investment made in the inventory as quickly as possible, as efficiently as possible is achieved.

So different valuation methods are important and we should be careful that is a true manager of finance, true manager of finance or expert in finance or CFO of the company should keep on advising the production department, purchase department that they should buy the material in the stocks which are optimum, neither too less nor too more and the valuation should be done appropriately so that finally the recovery of the funds invested in the inventory is not a problem.

Now we will talk something about the it is a very interesting area next part that is the inventory strategies. Because it is a big investment or you can call it as most illiquid investment. Most illiquid investment you can say. We have seen that when we make any investment in the inventory we can say that that investment becomes illiquid for some period of time because you cannot convert it into cash as and when you wanted.

It depends upon the external factors and especially the demand in the market. If there is no demand in the market you cannot create the artificial demand. If you can create the artificial demand maximum you can do is you can convert the inventory into the credit sales or accounts receivables. So it means one current asset into another current asset but not at least into cash. Out objective is to convert the inventory into cash not into the credit sales or accounts receivables.

So if the inventory is there it should be converted into cash and should be convertible into cash as quickly as possible. So for that purpose we should have some appropriate strategies. Now let us look at the strategies and the requisites for building a strategy by the firm. Like see every firm should follow a integrated approach. They should look the inventory from the place from where the inventory is being acquired as a raw material.

Then it is going to the processes means it becomes raw material, then it becomes WIP work in process and finally it becomes the finished product and it goes to the market. So what should be your acquisition strategy for the inventory. It cannot be 0 inventory, not possible. So it means if 0 inventory level is not possible you cannot run the show with that. It means you have to keep the minimum inventory.

We discussed in the past that even under JIT just in time technique of material management we keep the minimum inventory with us so that because of any obstructions in the supply chain arrangements if the supply of the material gets affected then whatever the material is there in the store that can be first used. So number 1, we should look at the inventory management in the holistic sense, in the integrated sense, and we should follow a integrated approach.

Look that when we are buying the raw material what is its state with the supplier? Is it available in plenty? Is it available without any kind of the limitations or if it is limited in supply. Look at the supplier side or second thing is if it is available means there is no restriction on the supply but at least on what terms and conditions we are buying it from the suppliers. Are we buying it on cash? Are we buying it on credit?

How much credit period the supplier is ready to give to the firm that part. How much time it is going to take within the processes. How much time it is going to take to get it converted to finished product and how much time it takes from the place of production to reach or to move from the place of production to the place of consumption and how the consumers are going to buy the products of the company.

Are they ready to buy it on cash or it is on the credit. So entire operating cycle has to be taken into account and for that purpose to make your integrated approach most effective, most suitable, most revenue generating and the say profitmaking we should forecast about everything. How much sales we are going to make in the market in the time to come for which we are budgeting; which we are planning, which we are forecasting.

How much time it is going to take to convert the raw material into the finished product and how much time it is going to take to acquire the raw material from the place of supplier to the place of manufacturing. Order processing will take how much time?

(Refer Slide Time: 20:520)

Production planning should be very carefully done. Machine scheduling should be very efficient. And the vendor engagement should also be very good. Vendor in terms of suppliers of the materials as well as the suppliers of finished product from the market to the consumers. So in that case we have to have a integrated approach if we want to have the very effective and value adding strategy with regard to the inventory.

So first prerequisite is that go for a complete integrated approach because we would be able to sell the product in the market if we have the regular supply and that too in the desired quantity. More we want, more it is available. Less we want, less it is available. We are able to adjust the manufacturing process also depending upon the sales conditions in the market and similarly we are able to deal with the suppliers also while increasing or decreasing of the supply of the material. So it should be integrated approach. This is the first prerequisite.

Second prerequisite is integration of inventory functions to corporate strategy of the firm. What is the corporate strategy of the firm? Normally see when you talk about the corporate strategy of the firm, we can talk in terms of say for example in terms of the marketing strategies. In the marketing strategy we follow say market skimming strategy or the market penetration strategy right. In the market skimming strategy what we do?

We sell lesser number of the products in the market but the quality product at a high price and by selling the lesser number of units in the market high price units in the market to the class of the people or to the classes not to the masses we would like to earn the same amount of the revenue as we are going to earn by selling product of masses at the low price and the maximum number of units in the market.

Ultimate objective is to earn a given amount of the revenue and the profits. For example the company's objective is that the profit should be 1000 Rs per month. Now that 1000 Rs per month you can achieve by selling 5 units in the market at 200 Rs per unit and then you can sell or achieve that means when you call it as the revenue or the profits. For example we want to have the revenue of 1000 Rs per month.

So you can have that revenue by selling 5 units of 200 Rs each in the market or by reverse by selling 200 units of 5 Rs each. That is the choice of the strategy under the penetration we would like to serve the masses and to produce in bulk. Under the skimming policy we would like to remain selective. Our consumers are also limited and we do not want to reach up to the masses.

For example you talk about these branded products like we talk about the say Nike shoes or we talk about the say Puma shoes or you talk about the Adidas products. Now what is the strategy of the firm? These are very highly priced products right? They are placed, they are positioned differently in the market. Nike shoes are not for everybody. Puma shoes are not for everybody. Adidas products are not for everybody.

Even the seller knows who is going to buy their product. Even the buyer knows that whether I can afford or not to buy these products. Ultimate objective of the company is that by following this kind of the strategy, skimming market skimming strategy they ultimate focus upon that our revenue has to be a given amount, profit has to be given amount. That you can achieve by selling lesser number of units in the market and by following the market skimming policy.

Other way around it can be the market penetration policy. So we have to see what is the corporate strategy and accordingly the inventory strategy has to be built up. Success of the business strategy depends upon the operational strategy. It means you are going to achieve because if you want to serve the masses we should have sufficient supply of the raw material. Only then we will be able to convert that into the finished product and to serve the entire market.

Other way round we can have the limited supply, limited inputs, limited outputs, and limited sales in the market; that is also our choice. Operation strategy guides to techniques of inventory management. What kind of the strategy we are going to have, skimming or penetration. If it is a penetration certainly you have to acquire in bulk. If it is skimming then even by being say selective in buying the raw material or maybe the semi-finished products we can serve the market so we can achieve the corporate goals or the we can work as per the corporate strategy.

Achievement of ultimate goals of sustainable competitive advantage because we have to stay in the market. Not for today but for long and the overall say growth of the company has to be spectacular so ultimately that to a larger extent is possible by following the appropriate inventory strategy and that inventory strategy has to be as per the corporate strategy so that when both go hand in hand the ultimate objective of the value maximization of the firm can be achieved.

So it means inventory is a very important component and being a most illiquid current asset we have to carefully manage it. So it means when you talk about the strategies, we have 3 strategies.

(Refer Slide Time: 26:26)

Cost leadership strategy. Then we have differentiation strategy. Then we have focus strategy. Cost leadership strategy, under this strategy cost leadership means when we are going to serve the huge market. When we are going to sell our product to the masses in that case we are going to focus upon one thing that is cost reduction and the cost reduction is possible when you acquire the raw material in bulk.

But when you acquire the raw material in bulk you have to invest huge in the inventory, invest huge in the manufacturing processes and invest huge in converting the finished products and taking it to the market. So inventory strategy in case of the cost leadership strategy remains marked to stock.

Continuously manufacturing and passing on to market and then keeping in the warehouse also so that sometime if the market goes up or the demand in the market picks up beyond even our existing level we have sufficient inventory for that and we are sure that since we are selling at the lowest possible price in the market so we are able to reach up to the masses or to the maximum or to the largest segment of the market.

So it means the inventory strategy is to acquire maximum, manufacture maximum, sell maximum and to attain maximum revenue and the maximum profits. Second is differentiation strategy. Under differentiation strategy we manufacture different kind of the products. We differentiate the products and we sometime say manufacture the product for masses also and we manufacture the product for the different type of the customers you can call them the manufacturing the customized products.

If there is a differentiation strategy that we want to create serve the different markets different types of the customers and sometime when the customer is choosy, selective, we have to serve his needs also. In that case the inventory strategy has to be make to stock or assemble to order. Number one is that you manufacture, expect that we will be serving some segment which is not very choosy, not very selective.

So their needs can be fulfilled from the products which have already been manufactured. And accordingly acquire the raw material, manufacture the product and sell that in the market. But at the same time we can have some of the customers who are very selective also, who are very choosy also. So in their case, we will have to keep the say semi-finished products ready with us and then we have to assemble that say product to the order.

Sometimes say for example in case of the bicycle industries. In bicycle, if you go to a bicycle shop, there are certain standard kind of the bicycles available which everybody comes and picks up and buys and goes. But there are certain kind of the cycles which can be assembled as per the orders. There can be some toys you talk about. Those toys can be assembled as per the order of the people. So it means both the customers are there.

If the customers belong to a mass then you follow the first strategy, make to stock and serve his requirements. But if he is customized or he is say for example a selective, choosy customer then we will have to assemble the product as per the requirements of the customer and for that we should have sufficient inventory of the semi-finished products.

And last strategy is the focus strategy means we are only serving the selective customers, limited customers in the market and in that case we are focused upon high-class people, upper-middle class people or maximum middle-class people. No lower-middle income groups. No low-income groups. No below poverty line people. It means when you are serving the high-income group people their needs you understand, their paying capacity you understand.

Accordingly you are manufacturing the products, accordingly you are pricing the products and distributing the product in the market. So that is called as a focused strategy. For that you know that our customers are limited. So our manufacturing process has to be adjusted accordingly. It has to be priced, the product has to be priced accordingly and then we have to serve the needs of those customers so that means customer is, in this segment customer is ready to pay any price.

But he does not expect any even iota of the defect in the product. So you have to be very careful. So in that case when you buy the raw material that should be of the best quality. When you process the raw material that should be done in a best possible way and when you sell the product in the market that has to be very carefully done and priced carefully so there we have to use the different inventory strategies like make to stock or assemble to order.

Largely it is assemble to order or make to order or engineer to order. Sometime we have to design the product for the special type of the customers who are ready to pay any price but they want the product of their choice and in many cases for example in the car industry it happens that people want to have the cars of their choice, sports cars or SUVs, sports utility vehicles. People want to have the special kind of the products.

In cycles, racing cycles or some sports cycles you have the say requirement of the people which is customized, which is totally a special requirement so they do not worry about the price but they want the product of their choice. In that case sometime you have to make to order or sometime you have to engineer to order. So accordingly we should have the availability of the raw material with us.

So since it is a very high-end product so the cost of the raw material will also be very high so keep the investment limited so that it keeps on liquidating also and as the product keeps on going to the market we keep on supplementing it with the old or with the new products and accordingly we will have to have the inventory strategy. Here I will like to share one interesting story with you that some time I was reading somewhere that General Motors had who is a manufacturer of cars, American company manufacturing cars, all type of the cars.

They are into India also but I think they are closing operations from India. They said that let the people think about or any person think about any kind of the cars that my car should have this kind of the property, that kind of the property, this feature, that feature, everything. Let him think according to his imagination power and give that design to us or maybe the requirements to us; not design but their requirements to us.

And within 15 days we will hand him over hand him over the keys of the car. So it means the company has to think in a innovative manner and those kind of the companies follow the focused strategies that they are going to serve the classes not the masses. So the choice of raw material, investment in raw material, conversion of raw material into finished product and converting that finished product into cash by selling their product in the market has to be in a synchronized manner.

So ultimately everything is interlinked. So we have to be very careful while managing inventory from the angle of say short term funds management or the working capital management because any investment in the inventory can be converted into cash if it is appropriately made. If it is unplanned or if it is a say in abundance then it will be very difficult for anybody to convert that into cash or as quickly as possible to convert into cash.

And we have already seen the story of SAIL that if they are not able to recover their investment made in the inventory and the inventory started mounting so well-functioning a largest steel manufacturing company which was a profitmaking company in India became the lossmaking company and became a sick company. So let us see. We will continue the discussion on this inventory management in the other class in the classes to come.

Also in the means say in the classes in future also and we will arrive on a some say logical conclusion that what important factors have to be borne in mind while managing the inventory as far as the management of the working capital is concerned. At the moment I stop here and we will rest of the things we will discuss in the next class. Thank you very much.