Working Capital Management
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Lecture - 18
Inventory Costs

Welcome students. So we are in the process of learning the inventory management under the working capital management. When we talk about the management of inventory it has different perspectives. When you simply learn the inventory management we have different techniques like economic order quantity EOQ and then JIT and different techniques of inventory management. That is a different perspective in which we learn the inventory management.

For the working capital part when we learn the inventory management we learn that how to keep the level of inventory at the optimum level and what are the different techniques, methods to minimize the level of investment in the inventory so that it continues the production process also, serves the market also and we are not to be at the extra cost of investment in the inventory also. So we were talking, I was, we were discussing.

I was talking to you the importance, the rationale of the inventory management that it is a difficult task to manage the inventory because the mismanagement of inventory I would tell you. The mismanagement of inventory can make a well-functioning organization a sick organization. It can bring the firm under distress, under the stress, under the sickness and it can spoil the overall running flow of the firm. How it happens?

I have shared with you a story, a case, a real life case that happened recently in India. You have heard about the Steel Authority of India Limited. You know this is a very big company in the public sector. Till 1991 when India was a closed economy, not a globalized economy, it was a closed economy; Steel Authority of India was the steelmaker to the nation. We had only 2 companies who were manufacturing and supplying steel in India.

And larger market share was with the SAIL and some part of the total India's market was with the TISCO also. SAIL was called as the steelmaker to the nation. Now what happened? After

1991 when the steel sector was opened for the private sector participation and private sector firms were allowed to manufacture and sell steel in India or serve the Indian market with steel. In that situation in the western part of the country many private sector firms came up manufacturing and selling steel in the private sector and 2 important firms were Lloyd Steel and Essar Steel.

In the southern market of the country Jindal Vijayanagar Steel Plant, Asia's first hi-tech plant came up in the steel sector. So it means it gave a very stiff competition to the SAIL. Earlier when the SAIL was the only single largest entity in this country manufacturing and selling steel to the people of this country and serving the 90 more than 90% market of this country, now they had to face a stiff competition from the private sector firms in the western part of the country from the Lloyd and Essar Steel.

And in the southern part of the country they had to face a competition from the JVSL Jindal Vijayanagar Steel Plant which is now called as JSW Jindal Steel Works. It is renamed as Jindal Steel Works at the Vijayanagar which is Asia's first hi-tech plant which came up as JVSL Jindal Vijayanagar Steel Plant. Now as a result of this privatization and coming up of the private sector players in the market Steel Authority of India Limited lost major chunk of their market.

Because the quality of the steel they were manufacturing and the price of the steel they were charging from this market or from the users in this market when there was a private sector participation and competition from the private sector firms in the market when people found the better product at the lesser price they opted out to the new product from the new suppliers and SAIL had to lose the market. They lost the market in the western part of the country.

They lost the market in the southern part of the country. Now they are left with the northern India, Central India, part of the Eastern India. Larger chunk of the market is lost. Now that happened and when that happened the immediate effect of the company, this change in the market and the market dynamics was and the loss of the market to Steel Authority of India Limited that the inventory started, their inventory started mounting.

Because it is a big company, it is a large company having many plants, Bokaro, Rourkela, Bhilai, all these plants they have Jamshedpur sorry Bokaro, Rourkela, Bhilai, all these plants they had. They are manufacturing steel continuously; the production process is going on. When the production process cannot be stopped you cannot stop the selling process. But selling depends upon the demand in the market.

So continuous production process when the demand is not there in the market or the demand had just say been divided by half or that has just remained come down to half or maybe little more than half because of the loss of the major chunk of the market. So what will happen? What started happening with the SAIL that major chunk of their sales or their production started going to the warehouse.

And when it started going to the warehouse the inventory started mounting. Now what is happening? You are buying raw material or raw material is coming. It is going to the production process, being converted into the finished product. Earlier the finished product was going to the market because entire market was with SAIL but now the market is lost to the private sector players.

So part of the product is going to the market but part of the product is going to the warehouse and you are not able to sell that product in the market. At that time the SAIL had a very huge, large manpower, 1.47 lakh people and they almost because it is a public sector company they are the permanent employees. Their salaries card was stopped. They cannot be say asked to leave the firm and you cannot afford to stop the production process because there is no demand in the market so production should be stopped. That also cannot happen.

So it means when the production process is continuous but when the selling but at the same time selling process is hampered, it is stuck, it is interrupted so what happened? By the end of 90s, by the end of 90s, maybe 98, 99 Steel Authority of India started reporting loses. It became a profit well-functioning organization; a profitmaking firm immediately became the lossmaking firm.

And when the loss is sustained or continued to increase or to grow, loses continued to grow then a profitmaking firm became a lossmaking firm because of the loss of the market, because of the increased inventories and because of the less demand for the company's product in the market. So one single factor, other factors remaining the same; production is same, your processes are same, your entire thing is same.

But because there is no sail in the market or the sale of the product in the market has been significantly reduced so what happened? That it affected the overall inventory process of the company and a well-functioning profitmaking organization suddenly became a lossmaking firm. And it continued to be a lossmaking firm and government tried different ways and means to restructure the company or to bring it back on the wheels.

Or maybe to sometimes to say bring it or to make it back as a profitmaking company but when the government failed to achieve the say profitability of the firm or the company itself failed, company's management itself failed to bring it back on the wheels and to say make it a profitmaking company from a lossmaking company then finally government thought of say disinvesting or selling it to the private sector.

And for that global tenders were issued in the market but because of the very large size of the company because of prevailing inefficiency in the company and because of very large size of the permanent human resources in the company the disinvestment process could not deliver the desired results. So government finally dropped the idea of disinvesting the company because there is no buyer not in India but around the globe of this company called as SAIL.

So then the government thought of continuing with the process and running the company under the public sector and for that purpose the company's overall structure or the company's say this company was referred to the a consulting firm called as the McKenzie and McKenzie was asked to study the Steel Authority of India Limited and suggest some its revitalizing strategies. So McKenzie gave many suggestions that first of all your large human resources which are 1.47 lakh people it has to be brought down.

Anyhow you have to bring it down because you cannot sustain this much of the large human resources are not required in SAIL so first you have to bring them down. Second suggestion they gave that you have lost significant market in India and you are not, now it is not possible to regain it back because private sector players are more efficient, they are more expert in the market, they are more accepted in the market so do not expect that you will regain the market within India, it is lost, it is lost forever.

So you have the option is that you look to go out of India and think of selling your product in those markets where is it possible to sell and they suggested that Middle East could be a market for the steel of the SAIL and for that you have to look for the long term say contracts with the buyers in those countries and if you can make up some loss means loss market share in India with the new market share in those countries then you can think of that the sales that inventory level which is mounting that can be thought of say that can be brought down.

So then company worked on it. That company offered some VRS to the its adjusting employees. Then some other say incentives were given the employees so that they can leave the firm, they can leave the organization and then the strength of the company was significantly, human resource strength was significantly brought down and then company opened a long term contract channelizing agency or office in Dubai.

So that from Dubai the Middle East countries can be served or their market can be served and the lost market share in India can be regained by selling the product in those markets where there is a possibility. Third suggestion which was given by the McKenzie to the SAIL was that they have to modernize the technology of their 4 plants; Bokaro, Rourkela, Bhilai, and Durgapur. It has to be modernized and for that there was a requirement of the 50,000 crores.

So government thought of helping the company and that process was also followed. So you can see that as a result of that now the SAIL is again to some extent back on the wheels but it had become a sick company from a well-functioning or profitmaking organization and largely the factor was inventory, inventory of the finished goods and that inventory of the finished goods came in the balance sheet or appeared in the balance sheet of the company because of the lost sale in the market.

So you think about the importance of inventory management because your funds are blocked in the inventory and short term funds which are say so scarce which are so say precious which are so expensive if they are blocked into asset which is which has become now the least productive asset in that case what will happen? The profitmaking company will become a lossmaking company.

It has already happened in case of SAIL and it can happen in many other companies. When the companies become sick it only happens when they are not able to sell their product in the market. So if they are able to say readjust the manufacturing process then it is fine. But if it is not possible to readjust the manufacturing process and if the production goes on with the same pace but the sales do not pick up so what happens?

Slowly and steadily the company becomes sick and it goes out of the market. So we will have to think about that inventory management is very important as far as it is called as a current asset, short term assets, and funds are blocked in this asset. Short term funds are blocked in this asset.

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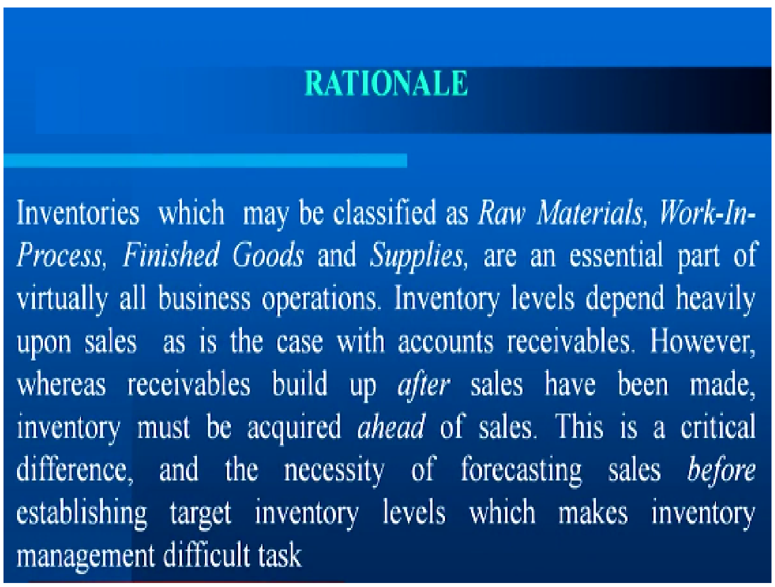

So as we have seen here in this case that this is a critical difference and the necessity of forecasting sales before establishing target inventory levels which makes inventory management a difficult task. So sales forecasting is very important. So if we are say for example in case of SAIL we have seen that if they have lost the market in India they should have forecasted it.

That if we are losing sales in India what are the other markets out of India or outside India which we can use or we can say supplement with the existing market or whatever the market is left with us so that lost sale in India can be regained from the market outside. So it could not be done at their own level but McKenzie then suggested them to go to Middle East. They found the market and then they improved the situation. So it is a bit say difficult task, is a challenging task.

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Also, since errors in the establishment of inventory levels quickly lead either to lost sales or to excessive carrying costs, inventory management is an important as it is difficult. It means if you have mismanaged or if you have mis-assessed the inventory requirement so sometime what will happen. We will have plenty of inventory with us so we have the large stock of inventory and it will increase the carrying cost right?

And sometime the obsolescence cost also and if there is a again you can call it as the forecasting of the sale is lesser than the say actual level which we can attain in the market so what will happen? They will be facing the cost of out of stock or stock-out cost. So that is again a very important. So appropriate or the proper forecasting of the sales or the say you can call it as the desired forecasting of the sales is a very important requirement.

If you are able to forecast the sales properly that what we are going to do in the market how much we are going to sell in the market then it is fine. Otherwise it is very difficult. And profitmaking company can become a lossmaking company. Financial managers in corporates have a responsibility both for raising the capital needed to carry inventory and for the firm's overall profitability right.

You have to on the one side raise the investment or you have to make the investment. So if you make investment more than the required level so what will happen? Cost will increase, returns will go down so profitability will be negatively impacted and contrary to this if we make lesser investment and if we face the stock-out cost we will be losing the sales. We will be losing the revenue. We will be losing the profits.

So ultimately profitability will be again negatively affected by not selling in the market and by not earning the profits which could have been possible if we could have sold in the market. Hence it is important for them to understand the financial aspects and issues involved in the inventory management. It is very important for the financial manager. It is important for the production manager because inventory is related to the production process.

But here as a student of working capital management it is very important for us to understand the inventory management from the financial perspective. For the financial manager also he also has to understand that how much investment is required to be made in the inventory and from where to arrange this investment, how to manage this investment and how to generate maximum returns on this investment so that it does not become a wasteful investment or it does not remain short of the requirements. Effective inventory management.

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Now let us talk about certain important points here. Ensure a continuous supply of raw material as I have been talking to you. Continuous supply of raw material. So to avoid the excessive investment into the inventory what we do is we ensure a continuous supply of raw material maybe by adopting the JIT just in time arrangement but we will have to make sure that yes sufficient inventory is available with us.

Now these days what is happening that to ensure the proper or the continuous supply of inventory to the firms there are 2 ways. One thing is either you have just in time process but since we have very rough logistic situation in India so adopting or following even just in time is also not possible. So what is the need of the plants or the manufacturers that they have to store the inventory the minimum or the desired or the optimum level of inventory they will have to store.

But when they store their inventory their inventory cost goes up. Maybe the inventory cost of the raw material it goes up. So what they do? Most of the manufacturers especially in electronics sector, in the automobile sector what they have started doing is their strategy is they identify the suppliers because for example if you talk about the car manufacturing company, a car manufacturing company in its own plant manufactures largely it manufactures the gearbox.

Other parts you talk about the steel, you talk about the rubber parts, you talk about the glass part, you talk about the say tyres, tubes everything they are supplied by the other manufacturers. They are called as end sellers. So now what is the strategy inventory strategy so that minimum investment is made in the inventory and continuous supply is ensured, continuous supply of the raw material is ensured to the company or to the manufacturing process.

When the company has designed the layout of their plant they provide the space to the suppliers of different inputs or different raw materials. They provide the space to the tyre suppliers. They provide the space to the tube suppliers. They provide the space to the glass suppliers. They provide the space to the rubber part supplier and to some extent they provide the space to the suppliers of the steel also.

So within the premises of the factory or the manufacturing process the plant one area is the manufacturing process manufacturing plant on the other side the storage area and that storage area is allotted to the suppliers of the different inputs. So those suppliers of different inputs are supposed or are required to keep a sufficient level of the inventory with them within the plant area of the company.

So inventory is being managed by the supplier but since it is a just a ways length so it means as and when it is required it is available to the manufacturing process. If it is not being done by the company what will happen in that case? The company itself has to manage its own inventory. So in that case the company the main manufacturer they will have to bear the inventory cost also. So they are passing on the inventory cost to the suppliers.

And suppliers rather than locating them outside the plant and then again facing the supply chain problems, they are located within the plant, space is provided by the company, sometime free of cost or sometime on some say normal renting. Rental charges are, normal rental charges are taken from the suppliers.

Suppliers store their products for the company so as and when the manufacturing process, car requires, cars manufacturing requires glass, part or the rubber parts or the seats or the seat covers or the say tyre then tubes and anything that is available within the plant, the inventory is being managed by the supplier. Cost is being borne by the supplier. So company without even maintaining any level of inventory they get the continuous supply.

This is an normal model which is being followed by all the manufactures in India. For example you visit the Maruti Plant maybe in Gurgaon or any other place you will find that the inventory place or say end sellers are storing their inventory within the plant only. They have been provided the space by Maruti and Maruti without maintaining any kind of inventory they are getting or they have ensured the regular supply of the material.

This is the one strategy. But in certain cases what happens that say for example a company which is manufacturing the agricultural product or agriculture means they are say raw material is agriculture based products. So they are processing it. For example you talk about the ITC. ITC when they manufacture different agriculture based products. So they have, you must have heard about the e-Choupal.

So they had the long term agreement or arrangement with the farmers and they have the arrangements like that whatever the total crop maybe the wheat crop or maybe the any other crop it comes up we will buy it in total from you and partly you will store the inventory and partly we will store the inventory. Or sometimes if it is a seasonal product so if it is a seasonal product so in some cases if the farmer is unable to store the product company has to buy the total product at the time of the season and they have to store it.

So there is no other way out. You cannot ask the end seller or you cannot ask the supplier because farmer’s financial position is not that good. Farmer’s say facilities are not means farmer is not able to have the facilities like of the cold storage and other kind of things. So in that case what will be there? Company will, ITC will ensure the supply of the good quality inputs. They have to be bought in the season when they come up, when the crop comes up.

That have to be properly stored and sometime the cold storage facilities we will have to use and the cost has to be borne by the company because farmer is not able to bear that cost. So in that case that is a different process. So in that case the inventory cost goes up or managing the inventory goes up but they manage the inventory cost in a way because they buy during the time at the time of season and they buy in bulk so overall purchase price per unit goes down.

That remains optimum for the farmer also and for the company also. Farmer is able to sell the product in bulk and the company is able to buy the product input in bulk and both have the agreement that your entire crop is ours. We will pay you the in full. So farmer has not to look for the market. He is also assured of the sale of his product and company is also not to look for the raw material but they have to store the raw material.

So cost is say acceptable to the company as well as the price is also acceptable to the farmers and both are having the win-win situation. So it means managing the inventory means we have to on the one side ensure the supply also and second side is we have to keep the cost under control also. Investment also has to be optimum and supply has to be regular and we have to avoid the stock-out situation also.

Second thing is maintains sufficient stock of raw material, whether it is by the end seller or whether it is by the company as in the case of the agricultural products it has to be made means it has to be assured that material is available in the sufficient supply in the desired supply and it is all the times available as and when it is required so that production process is continuous. Maintains sufficient finished goods inventory because we have to avoid the stock-out cost also.

So if you have to have sufficient finished goods inventory also as I told you that we have the regular distribution channels, distribution process but sometimes what happens that we have some extra or unforeseen orders, unexpected orders and firm should be able to meet all those requirements of every buyer in the market. Otherwise, the firm has to face the stock-out situation. So that should not be there because that will be the loss of sales, loss of revenue, loss of profits, and loss of goodwill in the market.

So we have to make sure also that the finished products should also be sufficient in supply so that there is no shortage of the finished goods inventory but the finished goods inventory should not be that much like SAIL that it becomes unsellable, it becomes obsolete and firm has to pay the cost of obsolescence and firm has to face the huge financial loses for not being able to sell its inventory in the market. Minimizes the carrying cost and time.

Minimizes the carrying cost and time. That is also the one important requirement of inventory management that your carrying cost should be minimum. So it means that is why we are emphasizing upon, optimum level of inventory. Too high too low, both have the cost. if you have too high, we have the very high carrying cost. if you have too low, sometime we have to face the stock-out cost and stock-out cost is very high.

I will share with you a survey done by the Harvard Business School professors where they have say interviewed 70,000 respondents across the globe or in the many countries in the world and finally they have concluded that stock-out cost is very high cost and it should all the times be avoided because sometimes it is not the case of the firms or companies. In our day-to-day situation also when we go to the market and we want to buy a particular product.

We have gone up to the market with a our made-up mind that we want to buy a particular brand of the shampoo and we want to have that bottle available with the retailer and when that shampoo is not available and retailer says sorry I do not have the product how you feel at that time. So sometime we feel that I will not come back to this shopkeeper or to this shop so that shopkeeper is losing the sales forever.

Sometimes the person says I will not use this company’s product because it not available now and I have been say denied the product. So it has a huge cost. People sometime change the buying options. Sometime they change the product options. Sometime they go to the alternatives. So it is a big cost. So we should not allow anything of the kind which is called as the stock-out cost and the carrying cost. Controls investment in inventories at an optimum level.

So finally maintain the inventory which is optimum, which is acceptable, which is giving you optimum returns optimum cost. So that is the ultimate objective of the inventory management because we have to look at as a student of working capital management everything from the financial angle. How much funds I should invest in this asset so that my cost of funds is also under control and my returns are also at the accepted or acceptable level. Motives of inventory.

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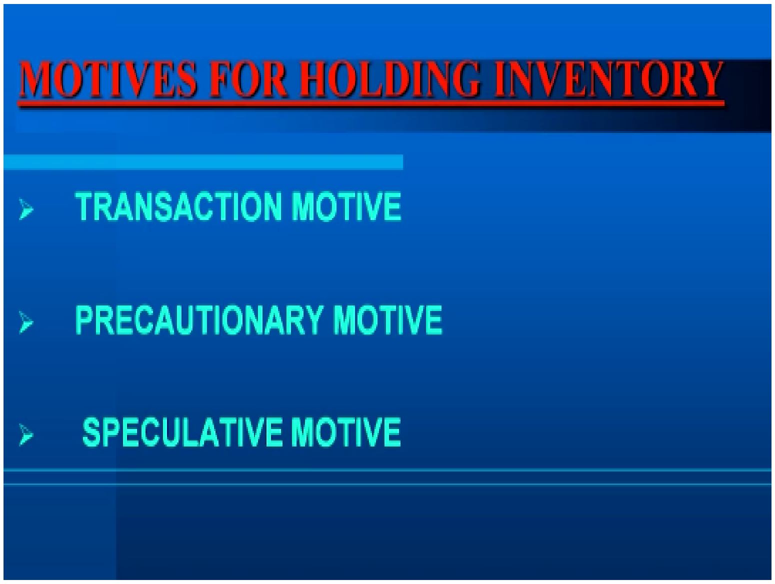

Why you store the inventory or why you go for the inventory management. Transaction motive. Precautionary motive and speculative motive. Transaction motive means we need the inventory for our manufacturing process, day-to-day process, continuous supply of raw material to the manufacturing process and continuous supply of the finished goods to the market. So on the one side you want to ensure that your plant is continuous working.

On the other side you want to make sure that your product is all the times available in the market. There is no shortage of your product in the market. So it is a transaction motive. Precautionary motive. Sometime there can be shortage of the material in the market. So we will have to face the music. So you keep sometime inventory which is expected to be short in supply in the time to come. We keep that more in our warehouse or in our godown.

We keep more inventory in the godown. So that we have not to face the stock-out situation in case of the raw material also. That is the precautionary situation. Sometime what happens that some agricultural products are like because agriculture raw material is available at the time of season. Now you think about a firm manufacturing the say this sarson oil or the mustard seed oil. Mustard seed is a agricultural product. It will be available at the time when the crop is there.

So if the firm who is manufacturing the mustard oil if they want to derive maximum benefit out of their product oil they are selling in the market they have to buy the largest or the maximum amount of the mustard seed at the time when there is a crop and from the places from the areas from the mandis where it is available in the bulk as well as the best quality of the seed is available.

If they do not buy at the time of season then rather than the manufacturer of the oil somebody else will store the mustard seed. At that time if he jack up the price then what will happen? If the mustard seed price goes up oil price will also go up and if the company is not able to sell the product at the competitive price in the market the well-functioning organization will be sick. Speculative purpose. Speculative purpose means buy today and sell at a higher price tomorrow.

That also happens. Everywhere it happens. There are many firms who maybe the agricultural product itself we talk about. The entire agricultural crops or products do not go directly to the manufacturers of the finished products. Sometime it remains with the middlemen also. Or sometime it remains with the firms for manufacturing the finished product but sometime they tend to sell the raw material also. So they buy in bulk. They store in bulk.

Part of the material they use in their own manufacturing process and part of the material they sell it to the other manufacturers when the supply is short in the time to come. It is a speculative purpose by investing more to earn more but selling the product at that time when there is a shortage of that raw material in the market. So if that is possible and we can estimate the market, we can forecast the sales, we can forecast the coming situation well then it is quite possible.

There is no harm in say using the inventory or the inventory management for the speculative purposes we can do that but we should be careful that sometime speculators have to face the huge loss also and that loss if comes then it will kill the company financially. It will affect the financial health of the company.

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Inventory costs. We all know what are the inventory costs. We have been talking since we started talking about the inventory management. So we have the 4 kind of the cost. Number one is the carrying cost. Major chunk of the cost is the carrying cost which is that part of the funds which are invested in the say purchase price of the inventory. Price we pay to the farmers in case of mustard seed, in case of potato, in case of onion, in case of other agricultural wheat, rice.

That is the main, this is the main cost, major cost. Second is handling cost. Transportation cost is there. Storage cost is there. When you keep it in the godown, electricity cost is there. Water cost is there. Manpower cost is there. Every cost is there. So that cost is called as the handling cost. Ordering cost, shipping cost, receiving costs, all these are the costs. And finally the cost is the stock-out cost, which I have been talking that stock-out cost is a very big cost.

It has been empirically proved after research that if you are not able to serve the market for the needs of the market as and when it is required then it affects the company's reputation and supply chain arrangements as well as overall goodwill and reputation of the market severely. So we should avoid the last cost also.

Because it should be firm's objective that the optimum level of inventory means ensuring the continuous supply of raw material to the plant or to the manufacturing process and ensuring the continuous supply of the manufactured or finished product to the market so that all the times when people want to buy any company's product the product is available on the shelf. If it is not available on the shelf, if you are not able to serve the market as and when market wants our product then the cost is very high. So all these 4 costs are important.

So keeping these costs in mind we will have to manage the inventory in such a way that on the one side supply is assured and the funds are also minimum investment of the funds also takes place and the profitability is also not compromised. That is also at the desired or the expected level. More about the inventory management I will discuss with you in the next class. Thank you very much.