Lecture-06
Supply Chain Strategy

Welcome back. In our last session we discussed about different views of supply chain management and we discussed the cyclic view and the push/pull view. And in push/pull view we discuss the importance of boundary of push/pull and as a supply chain manager the data analytics will help us to decide dynamically where to keep the boundary of push processes and pull processes in a supply chain environment.

Now the supply chain as we discussed in our last lecture must fulfil must be in sink with the competitive strategy of the organization. And we discuss a 3 step processor for achieving that strategic fit between the competitive strategy and the supply chain strategy. We also discussed that there are different types of functional strategies in a value chain right from the new product development to the after sale services there are various value addition component and human resource, information technology, finance, accounting.

These are supporting functions which help in achieving the objective of new product development, marketing, distribution, logistics and after sale supports. So all these functional strategies must be in sink must be in line with each other and that is the need of current business environment. If these strategies are not in line with each other probably the competitive strategy of the organization cannot be achieved.

Now particularly in this course we are focusing more on the supply chain strategy that what is the supply chain strategy and how we should develop with the help of data, the robust supply chain strategy which can be fulfilling the supply chain capabilities and those supply chain capabilities are in line with the customer requirements and we yesterday in our last lecture discussed that those customer requirements are dynamic.

And data analytics may help us in understanding in continuously monitoring those changing requirements. So now let us discuss that how the various components of supply chain strategy or yesterday we discussed that supply chain strategy is manifested, is exhibited in the form of

various capabilities and let us discuss what are those capabilities which a supply chain should develop.

And with the help of data analytics, with the help of real time data analysis we will see that how these capabilities will help us over a period of time to develop a robust supply chain strategy helping in achieving the competitive strategy of the organization.

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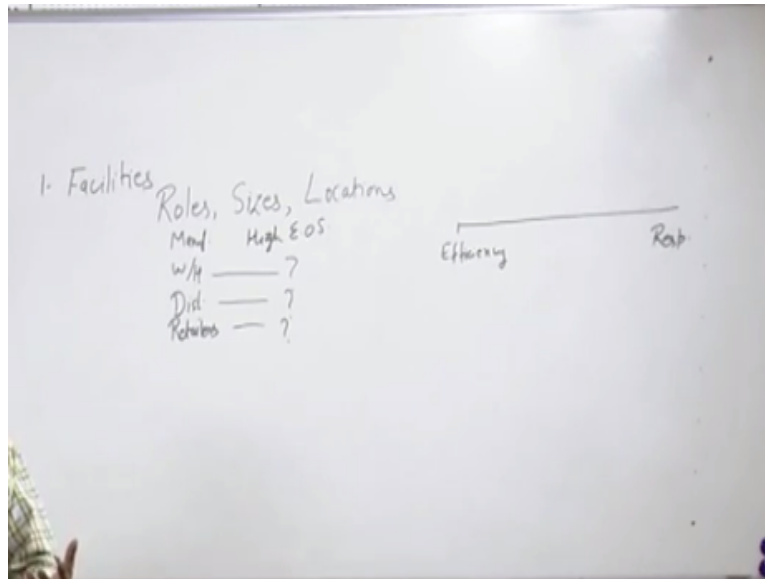
So very first capability a supply chain develops that is in the form of facilities. You need to develop various facilities in a supply chain and these facilities may be of different types, there may be different roles of these facilities, so what are the roles of the facilities?, what are the sizes of these facilities?, what are the locations of these facilities?. These are some of the very important questions.

We like to answer in this particular aspect of supply chain capabilities that whether my supply chain facility is a manufacturing facility, it can be a warehouse, it can be a distributor, it can be a retailer, so these are different types of roles, my facilities may do and I need to see what should be the number of these facilities. How many manufacturing locations I require?. You have example like company Maruti, company of Tata motors, company like Hyundai motors.

They have primarily one big manufacturing facility. On the other hand if you talk of petrochemicals or you talk of some other products which are having multiple manufacturing facilities. You have one big refinery, but then you have so many so many distribution points,

so many outlets through which you can refill your LPG cylinder, so you need to see what are the different types of role you expect from your various facilities in your supply chain.

There are centralized manufacturing, there are examples of decentralized manufacturing. So where the unit cost of product the rule is where the unit cost of the product is very high. You will like to go with centralized manufacturing facility. So this is based on data. And when the unit cost of the product is low you can go with decentralized facility of manufacturing. You can have multiple manufacturing facilities in different markets.

So now it depends up on your target, your type of product, that what type of product you have, and accordingly you will decide the number of manufacturing facility. Again when you want to achieve high economies of scale, when you want to achieve high economies of scale you will like to have bigger sizes of your here you get high economy of scale, if you have a bigger size of manufacturing facility you get higher economy of a scale, the meaning is the cost of production per unit decreases accordingly.

And if you are not interested and obviously when I am talking of high economy of scale size should be bigger and it is more like centralized manufacturing facility. So when you have centralized manufacturing facility you can achieve higher economy of scale and higher economy of scale means your supply chain is efficient one. So you see how facility can help you on moving from efficiency front year to responsive front year.

If you are making a bigger facility, if you are making a centralized facility you are on the left side of this spectrum. And if you are making more facilities, if you are having a decentralized manufacturing system and a smaller facilities of manufacturing you are moving towards the responsiveness side. So facilities can help us in deciding the type of supply chain strategy you want to have the type of capabilities you want to have in your supply chain.

So this is about the manufacturing and high economy of scale or low economy of scale. Then same replies for the warehouses, same applies for the distributors, same apply for the retailers, how many wholesalers you want?, how many distributors you want?, how many retailers you want?, what should be the size of these wholesalers, what should be the size of these distributors, what should be the size of these retailers.

All these are questions we want to know in this particular case of facilities. Then another important question we like to have the answered for that is the location of these points. Where should you locate your warehouse, where should you locate your distribution aspect, where should you locate your retailers, do you want to have retailer in most expensive location of your city?, or you want to have retailer at a low cost location in your city.

So depending upon your efficiency and responsiveness, if I want to locate a retailer let say in Connaught place in New Delhi or south extension in New Delhi probably my supply chain is not an efficient supply chain. But if I am locating a retailer in some of the low cost locations may be east Delhi in Delhi. In that case it is towards the efficiency side of the supply chain. So the location of the wholesaler, retailer, distributor, manufacturing facility will give you an idea whether you are on the efficiency side or on the responsiveness side.

Many of the new factories, many of the new organizations are opening their manufacturing facilities in some of the newly form states in India, to avail the benefits of taxes, to avail different types of incentives, given by state governments given by the central government to promote industrialization in those states. And when you are moving to those places this is an example of efficiency. While it is more convenient, it is more responsive that you locate your manufacturing facility in NCR.

You locate your manufacturing facility near Bombay, near Ahmadabad, which are already very popular manufacturing locations. But the cost of land, the cost of labour, and cost of other resources required for manufacturing are already very high on those places. So though you will get responsiveness but cost will be very high. So many manufacturing facilities are located in these new states to take the advantage of efficiency in your supply chain.

So all these things that when can I get the tax benefit, where I can get the benefit of income tax, where I can get the benefit of excise, where I can get lower cost of labour, all these things are helping us in a dynamic environment for changing the location of even my manufacturing which is a costly affair, which is a long term affair, but still many of my friends in this class may be aware that.

So far we all used to consider China as a location for low cost manufacturing, so all major manufacturing players of the world, they are looking to locate their manufacturing facilities

in China because Chinese are known to be the very low cost manufacturing locations. But if you read the recent reports you will find that the benefit of China of low cost manufacturing is now no longer existing because of higher cost of wages because of higher labour rates etc.

and now that benefit is going to even southeast Asian countries like Cambodia, like Vietnam, and all those places, smaller places. So the benefit shifting to Vietnam and Cambodia type of country. So and new manufacturing facilities are going to those countries particularly Vietnam if I say. So you can take decision related to your manufacturing facility on continuous watch on real time watch of your data that in what type of scenario.

Where I can get the maximum benefit and accordingly you take the decision to locate your manufacturing facility. So the first issue is about the facility that how do I handle this facility issue, so that I can get the best of either efficiency and responsiveness. So my real time data not exactly on day to day basis, but may be at some interval I will take decisions about my facilities and continuously working on distributors.

I am continuously working on my retailers, so where to locate my new retailers, where to locate my new distributors, what should be the size of these retailers and distributors, all these things are very important decisions for a growing business and therefore data analytics will help me in determining the locations of distributors and retailers and on a longterm basis the location and sizes of manufactures and warehouses can also be determine with the help of available data.

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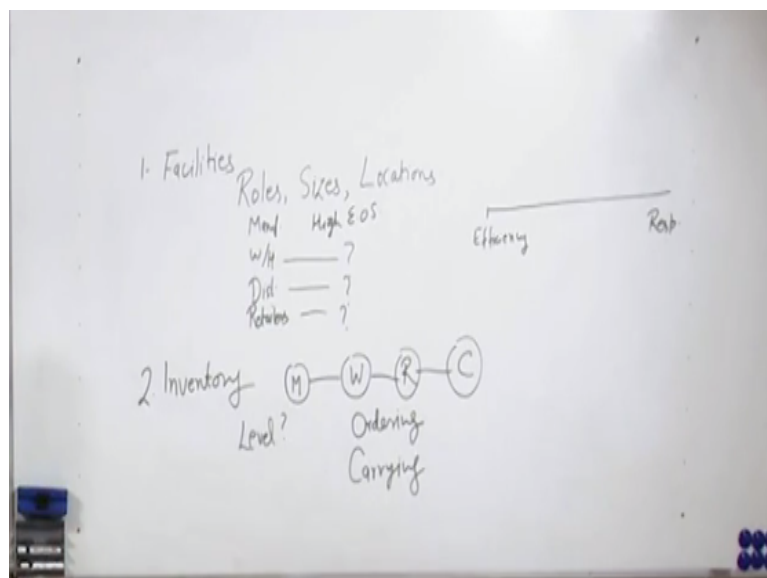
The second important decision after facilities in the supply chain and where data analytics is going to help us maximum that is inventory. Many decisions related to inventory are very very crucial for the supply chain. Now whenever you have a supply chain whenever you have a supply chain you are keeping inventory of various products in this supply chain. You keep inventory at retailers and you keep inventory at wholesaler, you keep inventory at manufacturer.

Now the inventory levels what should be the optimum inventory level. So the level of inventory is a very crucial decision because the Japanese system of management which is very very popular now, it says that inventory is not a value addition activity in the organization. So that system is probably you can say is NT inventory, we should not keep inventory because inventory is additional cost to the system.

So in some of the places in the world where things are very close to each other you can work with systems like JIT, where we are not keeping any inventory and things are readily available to us in real time. But in country like India or in many other countries where one party is geographically distant to 100 kilometer or more than that, so we need to keep inventory for taking care of lot of uncertainties in the environment.

So inventory is a necessity you can say in case of country like India. But what should be the optimum level of inventory?. Because whenever you are keeping inventory there are 2 types of very important cost which we are encoring. These costs are the ordering cost, and the second is carrying cost. You can say the ordering cost is also known as depending upon situation to situation.

The ordering cost can be loading, unloading cost, if a particular pocket is coming to wholesaler to retailer, so the loading at the wholesaler and unloading at the retailer and those types of cost are the part of the ordering cost. The carrying cost or the holding cost when you are keeping a material with you, you have blocked some of your capital in keeping that material.

And when have blocked the material, block the capital in keeping that material, so the opportunity cost, the benefits with that material with that amount of money you are deprived of, so that is the carrying cost. And in other books also you can find that the cost of space

involved, the cost of safety involved, the cost of (()) (17:34) involved, all these are the part of carrying cost. So carrying cost is a very important cost.

And there are lot of businesses because of improper inventory management and the carrying cost is increasing exponentially, business is gone down. So the carrying cost you can say is such type of evil, it is a disease you can say which eats away all your profit, you have a very good supply chain, you have huge demand in your supply chain, but if inventory is not properly managed and if this carrying cost is high this will eat.

This will take away all your profits. So for a supply chain manager and particularly now when we have tools like analytics available with us we need to pay very sincere efforts for appropriate management of inventory, and for that purpose we will see that how analytics can help us, the management of inventory requires that we need to adjust ourselves between 2 things.

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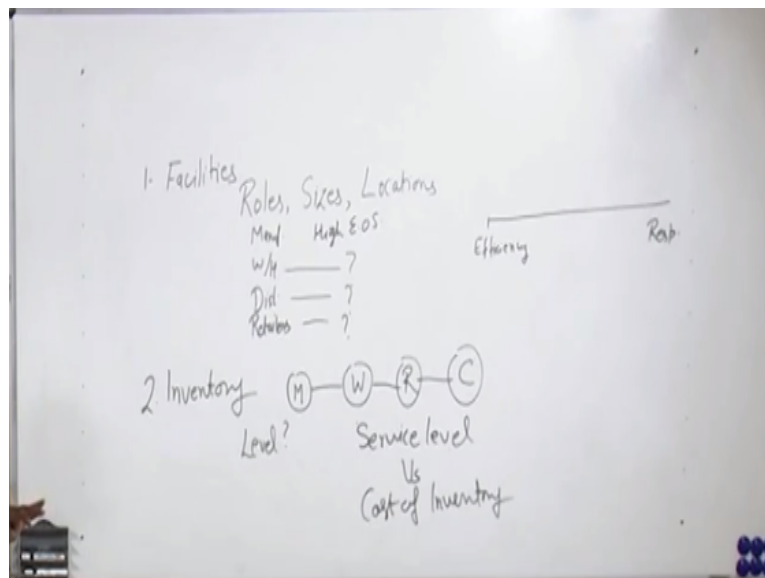
That we want to have a good customer satisfaction also, so for that purpose we want to achieve a good service level. So we want to have high service level and that is required for a better customer satisfaction. And at the same time we want to minimize the cost of inventory. So we need a balance, we need a trade of between service level and cost of inventory. If you are increasing the service level for improving the customer satisfaction.

So in that case cost of inventory will also be increasing, that is not desirable. We should keep cost of inventory low, and when we focus primarily on cost of inventory that it should be low

resulting will be the service level will also go down and that will lead to poor customer satisfaction, that is also not desirable. So we need to make a trade of between these 2 things that there has to be some kind of balance between service level and cost of inventory.

And it is very very important for a supply chain manager that you continuously monitor, that you that what is the expected service level for my product, And it is not a constant thing, and therefore real time data analytics will help us to continuously change the service levels. Today I am operating at 80% service level, let say with my own assumption I start a business and I am maintaining 80% service level.

The meaning of 80% service level is that out of 100 times if a customer visits to my retail outlet 80 times 80 number of times that customer is able to fulfil his or her requirements. I have readily available products with macro environment at 80 number of times, 80 times I am able to fulfil his or her requirements. 20 times I am not able to fulfill the requirement of that customer.

So that is the meaning of 80% service level. Now that 80% service level gives macro environment some type of cost of inventory. But my data analytics team, my marketing team capturing the data on customer satisfaction may tell this data to be that you are operating probably on a higher customer, higher service level. Your competitors are operating at 75% of service level and that gives me a margin of 5% service level.

That I can reduce my service level from 80% to 76% or 75.5% and this will directly translate, this will directly be reflected into my cost of inventory. My cost of inventory will accordingly go down and when my cost of inventory will go down this will accordingly increase my profits. So you can say that real time data analytics with respect to your service level, with respect to your inventory management is very very important.

And very crucial and it is directly related to the profitability of my entire supply chain. So therefore the analytics will help me in developing the capabilities related to inventory that what should be the optimum level of inventory in my supply chain and that optimum level of supplier inventory will help me to get the optimum level of cost of inventory. So this is the second important decisions area where analytics will help. The first is facility, second is inventory.
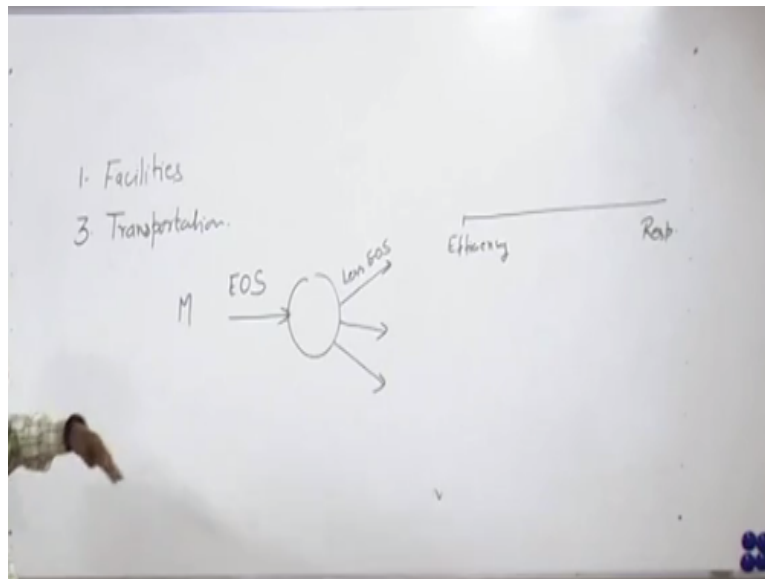
Now let us move to the third important area of our discussion and that will be more like your logistics, that third area is transportation. Transportation and many of us say transportation is logistics. So we are talking of that logistics and transportation that the movement from one end to another and from where house to retailer, retailer to customer, manufacturer to wholesaler.

And now a day we know that E-Commerce is a very current word buzz word in the area of supply chain. So where products are directly moving either from manufacturer or wholesaler to customer by passing the retailer. So transportation is becoming an important area in the supply chain and analytics will help us to a great extent in solving the transportation related issues.

So now let us see that how transportation related issues can be solved with the help of supply chain analytics or simply the data analytics tool. When you are getting products at a particular supply chain stage, let us say as wholesaler, so you are getting products from wholesaler, from manufacturer. So products coming to wholesaler from the manufacturer are coming in big sizes, in big lots.

So you have sufficient economies of scale when products are coming to a particular stage and when products are going out of that stage the size of each consignment is much smaller than the amount consignments. So you lose economies of scale in the outbound transportation. So

I am trying to say that you have higher economies of scale in inbound transportation and to certain extent you lose those economies of scale in your outbound transportation.

And this is a very crucial issue that how far you are able to reduce your economies of scale how far you are able to sacrifice your economies of scale. Because when you are sacrificing economies of scale it means you are moving towards this site, you are becoming more and more responsive and you are keeping economies of scale in your supply chain even in the outbound transportation you are remaining to the efficiency side.

So now depending upon your supply chain strategy you can decide certainly you will lose some economy of scale in the outbound strategy outbound transportation. But to what extend you are ready to sacrifice whether it is 50%, whether it is 60%, whether it is 70%, whether it is 25%. So now loosing particular economies of scale will determine your position in this efficiency, responsiveness spectrum.

If you loose too much you become very responsive. It means you are becoming very close to your customer. So that you are able to fulfil the requirements of a customer immediately. But if you are not ready to sacrifice economies of scale it means you are trying to serve a cluster of customer with one single facility and then you are maintaining some levels of economies of scale in your outbound transportation also.

So at this is again a dynamic decision today I am operating with lot of responsiveness, today I am operating with lot of response in my outbound distribution but tomorrow it is possible that I may not like to have that high level of responsiveness and I may close some of my lacks, some of my outbound lacks, and I will try to consolidate to become more efficient in my outbound transportation.

My services also possible today I am operating in a very efficient manner in my outbound transportation. But tomorrow I feel that market is becoming more and more responsive. Data will tell me that market is becoming more and more responsive and therefore I also need to be more responsive and at that time I may open more lacks in outbound transportation. So that I can reach closer to my customer and I become more responsive.

So the decisions with respect to outbound transportation is also govern with the help of my analytical tool, with the help of my data, so I can take decision whether I should have more efficiency or I should have more responsiveness in my outbound transportation. So with this we come to end of first three important decisions which will help us to develop our supply chain capabilities. We will discuss the more such important capabilities issue in our next lecture. Thank you very much.