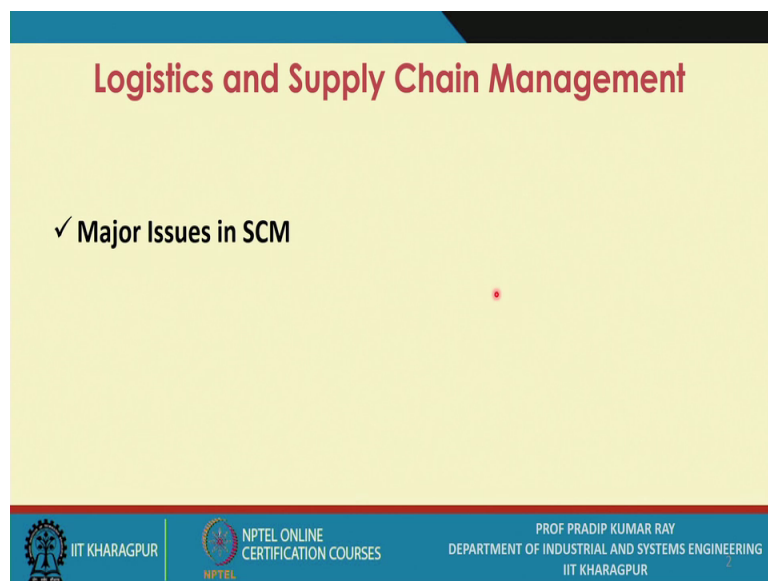


Management of Inventory Systems
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Lecture - 58
Logistics and Supply Chain Management (Contd.)

During this the third lecture sessions as already have pointed out that will be discussing a few important issues in Supply Chain Management.

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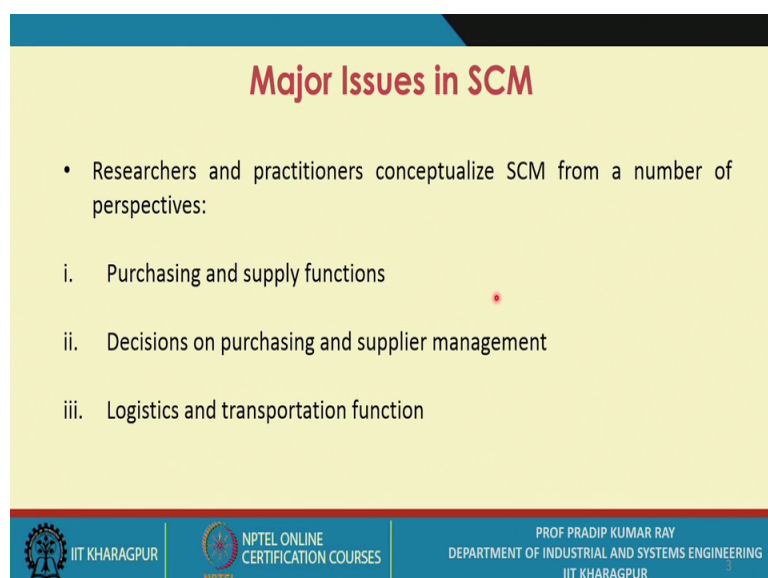


Logistics and Supply Chain Management

✓ Major Issues in SCM

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Major Issues in SCM

- Researchers and practitioners conceptualize SCM from a number of perspectives:
 - i. Purchasing and supply functions
 - ii. Decisions on purchasing and supplier management
 - iii. Logistics and transportation function

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Now, you know the supply chain management has become an important say you what you can say that an important say the approach. And this the supply chain the network must be must be under control for a company's control on it is financial performance.

So, suppose in today's context you lose control on say your the supply chains or the supply chain network, then ultimately may so happened that your survival maybe at stake. So, it is known that the supply chain so, you are you as a company is a closely linked with the supply chains. And how you are managing the activities related to your the supply chains so very, very important. So, here at this point in time when the supply chain network importance of supply chain network is well accepted and it is known to anyone.

Now, you also must know that what are the major issues in supply chain management. A large number of issues have already come up to be considered for creating to an efficient and effective supply chain. Now, the researchers and practitioners both are involved in conceptualizing supply chain management from a number of perspectives. So, first let us identify this perspectives. So, what are these perspectives? That means there are basically 3 important perspectives. Please note them down, first perspective is purchasing and supply functions.

So, you must have a thorough understanding of purchasing and supply functions. Already we have discussed in detail the purchasing function. Particularly the selection of the suppliers then evaluation of the suppliers performance, then the performance of you know the purchasing the department.



So, all these issues we have discussed, we also know what is a purchasing cycle. So, all these activities once known you must be able to know link all these activities to your to your performance as well as the performance of other members of the supply chain. Second important issues is the decisions on purchasing and supplier management. So, while you try to control a while you try to have and appropriate supply chain management for your organization, many kinds of decisions on purchasing and on supplier management you need to take.

So, what are those decisions, to what extend those decisions are affecting the supply chain management. So, these decisions may become very, very crucial. And then obviously, you know you should be aware of the logistics and transportation function.

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Major Issues in SCM

- In this context, the major issues are as follows:
 - i. **Selection of suppliers:** The process and criteria for selection is the primary influencing factor for positive and acceptable performance of the supplier.
Along with the supplier performance, the performance of the purchasing department is a critical factor and is to be continuously monitored and controlled.
The focus is on estimating the total cost of purchasing or ownership.
Each company needs to develop its own cost equation for this purpose.

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So, these are the 3 perspectives, now let us talk about the major issues. So, what are the major issues? So, the first major issue is the selection of suppliers, ok. That means you must have enough control on your supply chains. And you want to have an appropriate supply chain management system, ok.

Now obviously, the first major issue is the selection of the suppliers. The process and criteria for selection is the primary influencing factor for positive and acceptable performance of the supplier. That means, it depends on you as a manufacturer or the company that what procedure you will select, whether it is a rational procedure or not. So, what procedure you adopt for the selection of the suppliers. So, along with the suppliers performance the performance of the purchasing department is a critical factor, ok.

So, you just refer to our discussions on purchasing management, and we have already mentioned that how to say measure the purchasing department's performance what are the factors to be considered. And this purchasing department performance viz a viz the supplier in the selection particularly is to be continuously monitored and controlled, ok.

So, this point you note, the focus is on estimating the total cost of purchasing or ownership. As I have already pointed out that there are 2 issues involved. One issue is the first cost of purchase. So, it is normally it is easier to get an idea or get an estimate of the first cost of purchase.

But what is important is a to get an idea as well as to get and is a good estimate of the total cost purchase, ok. So, if you visit any purchasing department, and if you come across a particular say the cost equation reflecting the total cost of purchase. That means, you will immediately you may conclude that the company is aware of the impact of say the supply chain impact of the performance of the supply chain members on it is say the activities or the performance, is it?

So, if you act independently and you are not aware of the performance of your the supply chain members; obviously, you may not be in a position to propose a cost estimate for the total cost of purchase. Each company needs develop its own cost equation for this purpose. So, development of cost equation is an important say assignment and particularly the total cost of purchase.

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Major Issues in SCM

- ii. **Supply chain integration:** The scope of SC integration begins with the source of supply and ends at the point of consumption. There are four stages in the evolution of integration in SC from a complete functional independence to a stage of complete external integration.
- iii. **Information sharing in SC:** It is a strategy for achieving consistency in all functions among SC members so as to provide adequate visibility to enable SC members to make good decisions that can improve total SC profitability.

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Next important issue is supply chain integration, ok. So, this point we have been elaborating, and we have been focusing all the time. Because essentially when you talk about supply chain management, we refer to in the supply chain integration.

So, if there is ideal integrate or appropriate integration between the activities of say the different supply chain members, what is it is impact? A that impact is that smooth flow of materials within say the so within the supply systems within or between the supply chain members.

So, smooth flow of materials, and timely say the availability or say so the availability of for the materials at a particular point in time is assured. So, the scope of supply chain integration begins with the source of supply, and ends at the point of consumption. That means, up to the users level. There are 4 stages in the evolution of integration in supply chain, from a complete functional independent to a stage of complete external integration.

Now, we have already in the previous lecture sessions, we have already pointed out that that entire the supply chain say you network or the supply chain management. It has passed through a number of stages is a revolved through so there are 4 phases. The first phase what we assume that we used to assume in says it is, that used to have I have say functional independence that is one stage. And today what you tried to do? That means we try to move to a stage of complete external integration. That means, you are intimately linked with many external the systems, and to what extent you have say to what extent you are integrating with them.

So, supply chain integration there are so you can assess the level of integration from different perspectives there are many kinds of other measures of integration you can propose. And constantly you know this level of integration, you should try to improve particularly with a, particularly the integration with the external say the say the entities or external systems.

Next important issue is the information sharing in supply chain. It is a strategy for achieving consistency in all functions among SC members. So, as to provide adequate visibility to enable SC members to make good decisions, that can improve total supply chain profitability. So, this is a long statement. So, what is important is you know you should highlight certain points over here; like, consistency in all functions. That means, while you go for informations' sharing; that means you must have total systems approach.

That means, this information sharing must be say the among all the members of the supply chain. You must not say the prefer a particular say supply chain member or a group of supply chain members, is it ok?

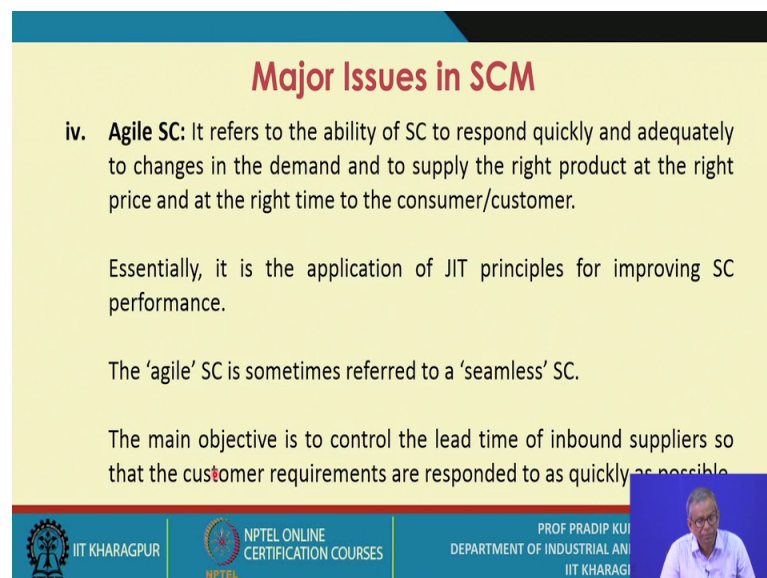
So, what we assume that there is an information flow between all members of say the supply chain. And any type of information is flowing between so the among the supply

chain members is are all very, very important, is it? And there must be adequate visibility, ok. That means system should be very, very transparent to enable SC Members to make good decisions that can improve total supply chain profitability. That means you are not a not only concerned about your company's profitability. You are also the concerned about the profitability of all members of the supply chain, ok. So, this has to be you know the perfect coordination and perfect integration, is it?

So, like say you have one member in your supply chain. Now, that the member may be a part of it is own supply chain network. So, it is there is a complicates network and the performance of say your supply chain say the member, may be dependent on say the performance of it is own supply chain network say the members. So, it is a very complex one, and that is why you know there must be an open approach. And the decision should be always say you say that the decision should be appropriate decisions you need to take to improve the total SC profitability.

Now, this is a very say controversial issues in the sense, the sometimes we need to study the effect of say a particular the company's the financial performance with say affect on the financial performance of any other say supply chain member.

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Major Issues in SCM

- iv. **Agile SC:** It refers to the ability of SC to respond quickly and adequately to changes in the demand and to supply the right product at the right price and at the right time to the consumer/customer.

Essentially, it is the application of JIT principles for improving SC performance.

The 'agile' SC is sometimes referred to a 'seamless' SC.

The main objective is to control the lead time of inbound suppliers so that the customer requirements are responded to as quickly as possible.

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Now, the next important issue is that is agility in supply chain, ok. So, you know say as I supply chain when we discuss these issues will you will come to know, that in a different way say the JIT based the principles are addressing these issue.

Now, what is agile supply chain? It refers to the ability of supply chain to respond quickly and adequately to changes in the demand, is it ok? So, when you install or when you use a JIT based approach, particularly TPS or Toyota Production System. So, if you remember there are 4 objectives of Toyota production system, and one objective of TPS is to say respond quickly to the changes in demand.

To what extent you are able to say the respond appropriately to an erratic demand situation? So, almost so the same concept we are referring to; that means, now here what you are saying, that you as an SC supply chain member, you as a must be able to respond quickly and adequately to changes in the demand and to supply the right product at the right price and at the right time to the consumer or the customers.

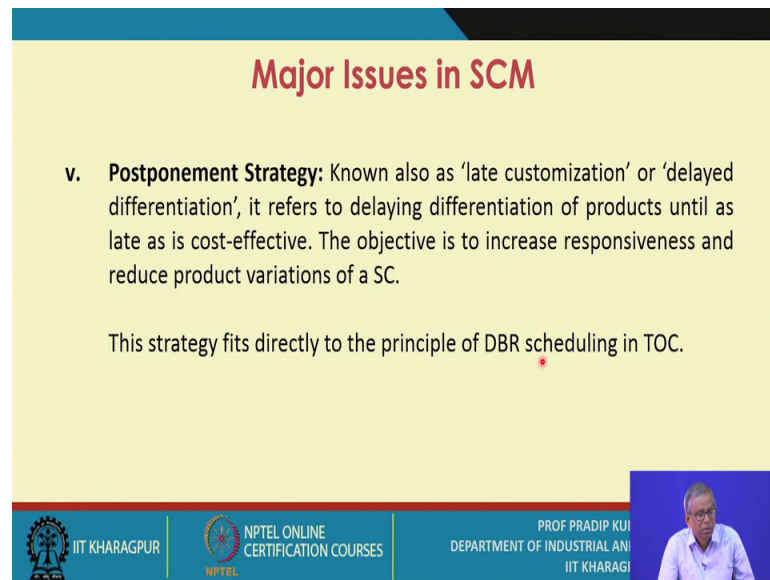
So, this is just these are the this is one of the goals of the JIT based the systems or JIT based manufacturing system. Now, essentially it is application of JIT principles for improving SC performance is point already we have elaborated. So, the agile supply chain is sometimes referred to as a seamless supply chain; that means you create the supply chain in such a way that there is no disruption; that means, there is continuity in the supply, ok. Maybe the supply rate has come down, but there is no disruptions, but there is no you know the no stock situation.

So, it that is why it is referred to as a seamless supply chain. So, just you note down this point many a time you use this time that is this particular term, and that is why this is refer to as a seamless supply chain. That is one of the major goals of designing supply chain. The main objective is to control the lead time of inbound suppliers so that the customer requirements are responded to as quickly as possible. Now like you know you want to create a better flow of materials say in your systems, and at the required rate.

So, and to meet or to match with your production rate. So, at any point in time. So, what is important is so you must have enough control are sufficient control on the lead time, is it ok?

So, usually you know if you lose control on the lead time, to maintain the supply you have the second alternative second best alternative that is a for the safety stock or the buffer stock you create. But can you do away with the buffer stock that is really a challenging assignment. And so, you must have sufficient control on the of the lead time. So, can you create a supply agile supply chain with this consideration, right?

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Major Issues in SCM

v. **Postponement Strategy:** Known also as 'late customization' or 'delayed differentiation', it refers to delaying differentiation of products until as late as is cost-effective. The objective is to increase responsiveness and reduce product variations of a SC.

This strategy fits directly to the principle of DBR scheduling in TOC.

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Now, the next important issue is postponement strategy. So, what is the postponement strategy? Known also as late customizations or delayed differentiation, it refers to delaying differentiation of products until as late as is cost effective. That means, you will not say the send it or you know or what you can do; that means you do not start producing.

And if the conditions that the conditions are such that that the activities are may not be cost effective. So, as soon as you assume that the activities to be carried out are cost effective so, you carry out the job, otherwise you postponed.

So, this is referred to as the postponement strategy and for proper the supply chain management, many a time you opt for such as strategies. The objective is to increase responsiveness and reduce product variations of a supply chain. So, there are many instances, there are many the case studies, where say the postponement strategy has become an effective means to improve the performance of other supply chain. These strategy fits directly to the principles of DBR scheduling in TOC, ok. So, DBR scheduling already you know that you know there are many release points in fasts.

So, the scheduled release points in the network, and what you try to do; that means, you control both the other quantity as well as the timing at what point in time you should release the item so that is very, very important. So, the postponement strategy as is

closely you know it fits, directly to the principles of DBR scheduling in theory of constraint.

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Major Issues in SCM

vi. **Vendor Managed Inventory (VMI):** It is one of the most widely discussed partnering initiatives for improving multi-firm SC, in which the supplier (manufacturer, retailer, or distributor) makes the inventory replenishment decisions for the buyers.

The supplier monitors the buyers' inventory levels and makes periodic re-supply decisions on order quantities, shipping and timing of supply with responsibility for both its own inventory and inventory stored at customer's distribution centres.

In the short run, VMI is found to reduce the total costs of the SC with decrease in purchase price and suppliers' profit.

However, in the long run, VMI may increase the supplier's profit.

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Now, the next important concept is the Vendor Managed Inventory. Now all VMI, so now, this particular other system VMI system has been adopted by several organizations. And so, you must have you must know what is it.

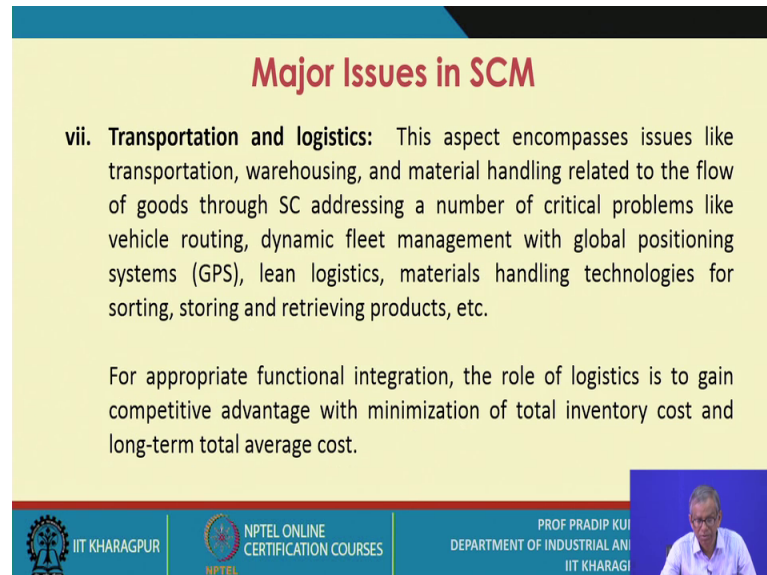
So, it is one of the most widely discussed partnering initiatives, ok; that means, you must have the partnerships in true sense with your suppliers for improving multi from supply chain in which the supplier manufacturer retailer or distributor makes the inventory replenishment decisions for the buyers, ok. So, that is your responsibility right; that means, as per the requirements of the buyers you change your being the supplier, you change your say the inventory policy.

The supplier monitors the buyers inventory levels and makes periodic resupply decisions on order quantities shipping and timing of supply with responsibility for both it is own inventory, and inventory stored at customers distribution centers, ok.

So, that means, enough responsibilities given by the customer are to the supplier to control the inventory level of at the customers plans. In the short run VMI is found to reduce the total cost of the supply chain with decrease in purchase price and suppliers

profit; so, this is the main advantage. However, in the long run VMI may increase the suppliers profit, ok.

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Major Issues in SCM

vii. Transportation and logistics: This aspect encompasses issues like transportation, warehousing, and material handling related to the flow of goods through SC addressing a number of critical problems like vehicle routing, dynamic fleet management with global positioning systems (GPS), lean logistics, materials handling technologies for sorting, storing and retrieving products, etc.

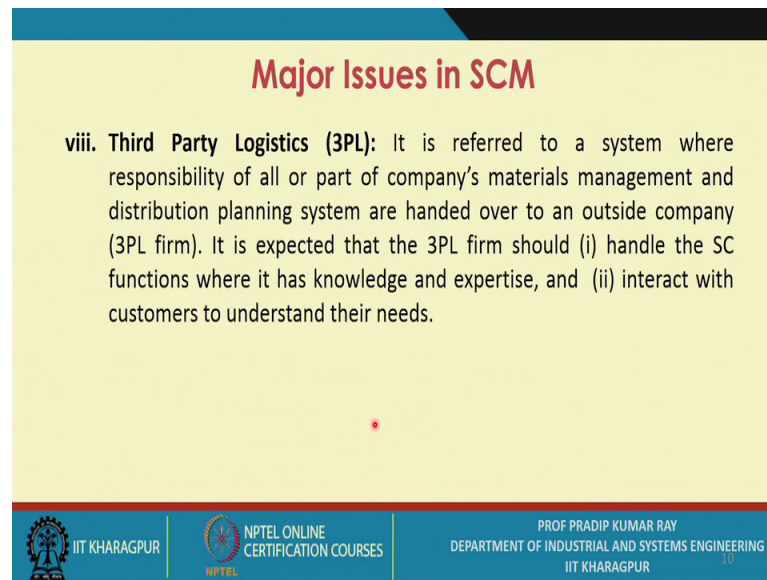
For appropriate functional integration, the role of logistics is to gain competitive advantage with minimization of total inventory cost and long-term total average cost.

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So, may the, may in the long run may decrease the suppliers profit, ok. So, this is one so, the major issues in the supply chain another important issues the transportation and logistics, these aspect encompasses issues like transportation, warehousing and material handling related to the flow of goods through SC, addressing a number of critical problems like. So, what are the problems you deal with under transportation logistics, the first one is the vehicle routing problem, dynamic fleet management you please note them down the these are the important problems you deal with when we talk about the issue of transportation logistics in supply chain management.

So, the vehicle routing dynamic fleet management with Global Positioning Systems or GPS, this is also an important problems you need to deal with. Lean logistics or say the logistics systems based on JIT principles, materials handling technologies for sorting storing and retrieving products etcetera. So, the material handling technologies play a very important role in this context. For appropriate functional integration the role of logistics is to gain competitive advantage with minimization of total inventory cost and long term total average cost, ok.

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Major Issues in SCM

viii. **Third Party Logistics (3PL):** It is referred to a system where responsibility of all or part of company's materials management and distribution planning system are handed over to an outside company (3PL firm). It is expected that the 3PL firm should (i) handle the SC functions where it has knowledge and expertise, and (ii) interact with customers to understand their needs.

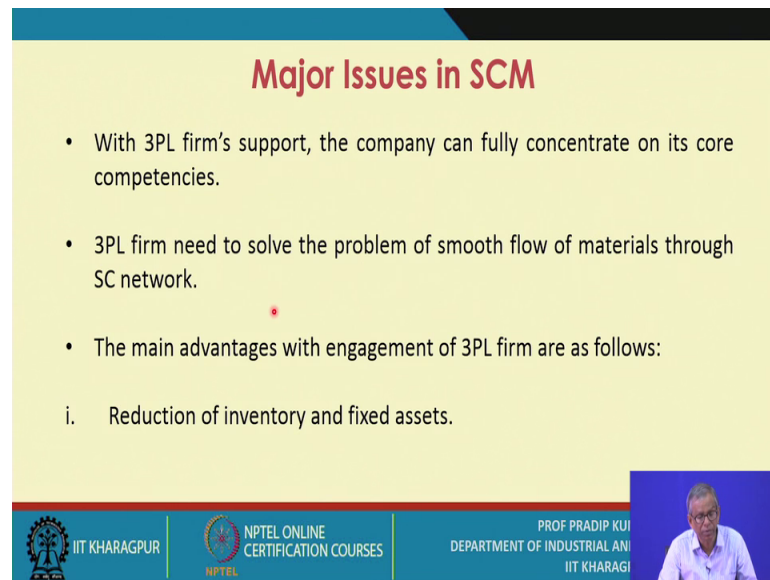
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So, that is your objective, now let us talk about the next important issue that is the third party logistics which is known as the 3PL. And you have so the ones we discuss the third party logistics or 3PL, then one extension of third party logistic is a 4PL or 4 party logistics, ok.

So, these 2 important of the concept you must be aware of. It is referred to as an what is the third party logistics of 3PL concept, it is referred to a system where responsibility of all or part of company's materials management and distribution planning systems; that means, the DRP also are handed over to an outside company, ok.




So, it is basically outsourcing of the materials management and DRP systems. It is expected that the 3PL firm should handle the supply chain functions where it has knowledge and expertise, and interact with customers to understand their needs so, that is referred to as the 3PL concept.

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Major Issues in SCM

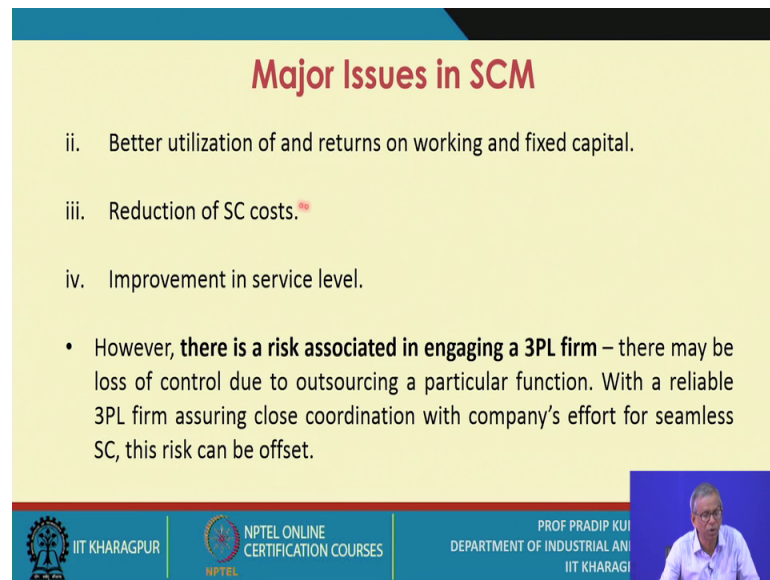
- With 3PL firm's support, the company can fully concentrate on its core competencies.
- 3PL firm need to solve the problem of smooth flow of materials through SC network.
- The main advantages with engagement of 3PL firm are as follows:
 - i. Reduction of inventory and fixed assets.

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With 3PL firms support, the company can fully concentrate on it is core competencies. So, that is the advantage; that means, entire materials management function is a responsibility of running the materials management as well as you know how the distribution requirement planning functions are handed over to another company as referred to as the 3PL firm.

The 3PL firm needs to solve the problem of smooth flow of materials through supply chain network, the main advantages with engagement of 3PL form as follows. Reduction of inventory and fixed assets that is one, beta equalization of returns on working and fixed capital, reduction of SC cost, improvement in service level, ok.

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Major Issues in SCM

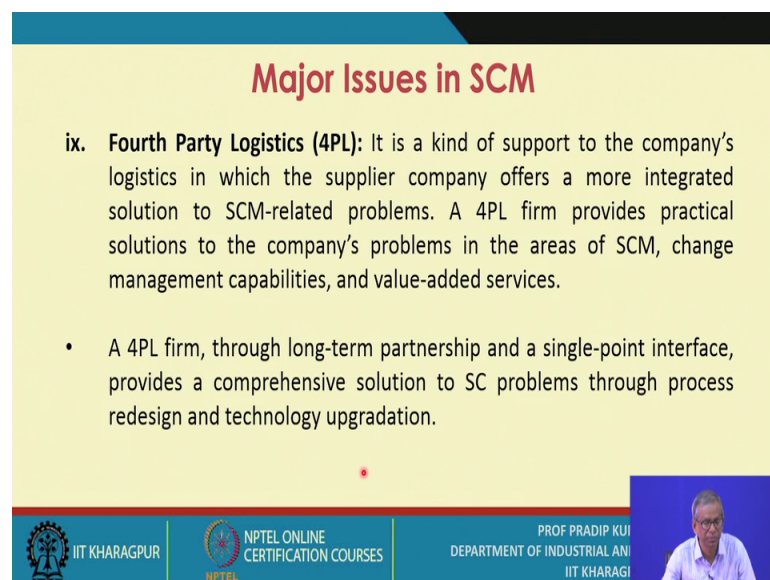
- ii. Better utilization of and returns on working and fixed capital.
- iii. Reduction of SC costs.
- iv. Improvement in service level.

- However, **there is a risk associated in engaging a 3PL firm** – there may be loss of control due to outsourcing a particular function. With a reliable 3PL firm assuring close coordination with company's effort for seamless SC, this risk can be offset.

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So, these are the advantages, however, there is a risk associated in engaging 3PL firm. So, what is the risk that you must understand at this stage. There may be loss of control due to outsourcing a particular function, ok; that means you lose control on the materials management. So, that is risk with a reliable 3PL firm assuring close coordination with companies effort for seamless supply chain this risk can be offset.

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Major Issues in SCM

- ix. **Fourth Party Logistics (4PL):** It is a kind of support to the company's logistics in which the supplier company offers a more integrated solution to SCM-related problems. A 4PL firm provides practical solutions to the company's problems in the areas of SCM, change management capabilities, and value-added services.

- A 4PL firm, through long-term partnership and a single-point interface, provides a comprehensive solution to SC problems through process redesign and technology upgradation.

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Now, extension of 3PL is the 4PL is referred as the 4th party logistics.

Now, this particular the system has also been adopted by several organization. So, it is a kind of support to the companies logistic in who is a supplier company offers more integrated solution to SCM related problems. Not only restricting to materials management, or say distribution requirement planning related problems.

A 4PL firm provides practical solution to the companies problems in the areas of supply chain management you note down, these areas change management capabilities that is very, very important and value added services. A 4PL firm through long term partnership and single point interface, provides a comprehensive solution to SC problems as we have already pointed out that the entire you know the supply chain network is very, very complex, and the that is why there could be many kinds of problems, of complex nature you come across.

So, the 4PL firm provides a comprehensive solution to SC problems through process redesign and technology up gradation.

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Major Issues in SCM

- Selection of a 4PL firm is to be made objectively with consideration of its ability particularly in redesign of functions and business processes, integration of SC technologies, outsourcing, and SC strategy formulation.
- 4PL is the state-of-the-art supply chain outsourcing.

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Selection of the 4PL firm is to be made objectively with consideration of its ability, particularly in redesign of functions, whether it has got the ability to redesign of functions and business processes, integration of SC technologies supply chain technologies whether it has got the ability, outsourcing and SC strategy formulation. So, 4PL is considered the state of the art supply chain outsourcing.

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So, this is an important issue; that means, not only you restrict yourself say 3PL, but also as far as possible you should move towards so, the 4PL the concept. And you should adopt 4PL so that the complex problems related to supply chain management you are able to solve in course of time.

Thank you.