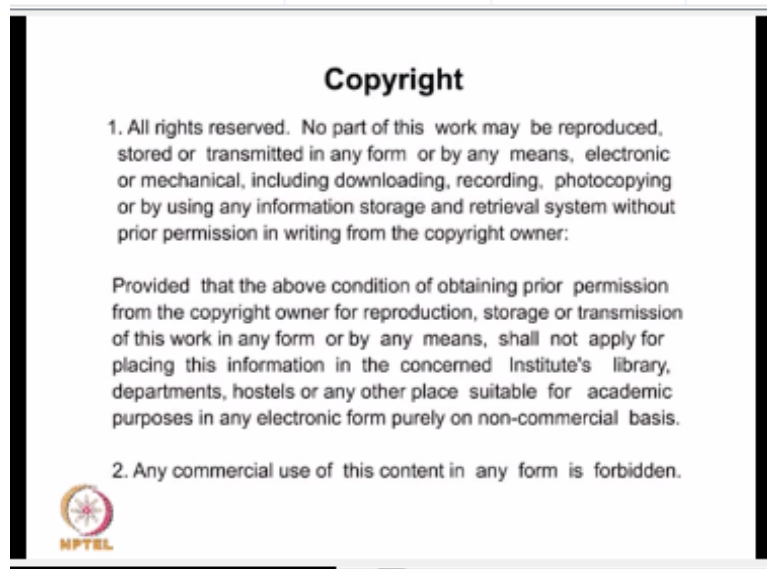


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**Global Supply Chain Management**

**Lecture – 06**

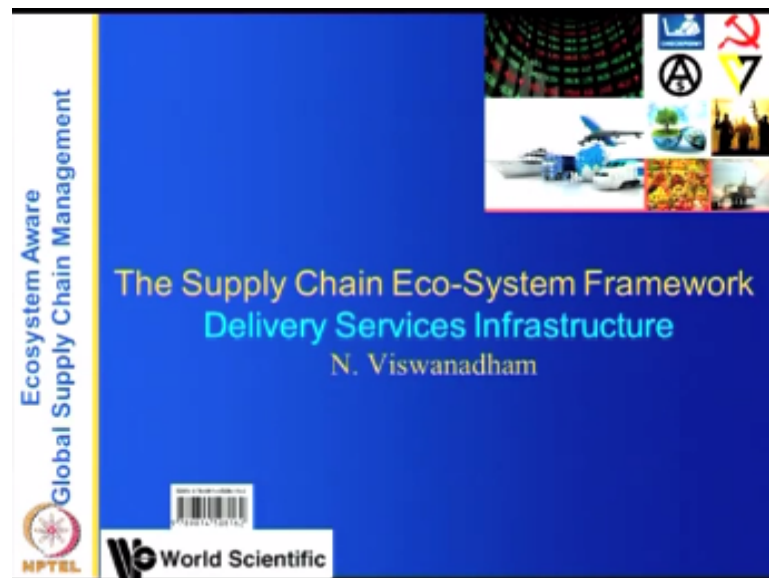
**Supply Chain Eco – System Framework:**

**Delivery Services and Institute**

**Prof. N. Viswanadham**  
**Department of Science and Automation**  
**Indian Institute of Science**  
**Bangalore**

Now we will look at the second norm of the supply chain ecosystem.

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This is the delivery services infrastructure so here the contents are.

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We should understand that the manufacturing which is the supply chain primary goal and the services are intertwined in other words there are several services which are needed in the manufacturing process we are going to see that in the next slide like logistics like finance like IT and so on so we cannot say they are manufacturing and services or basically independent they are intertwined they had to work hand in hand and we hear sincerity the delivery services infrastructure.

We look at the developments in transportation in recent times and also high performance grade logistics their features and some of the recent trends in logistics and finally conclude this particular section so here let us look at the manufacturing and services are intertwined in a supply chain.

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So let us look at the supply chain this is a manufacturing network which has suppliers as stands for sourcing for manufacturing D for distribution and reefer and R for retail and in this what are the kinds of services that are needed for a less manufacturing this one yeah in the pre production you conduct feasibility studies of the particular product you require finance and venture capitalist require lot of R&D in terms of doing the product design you also have the market research for your product.

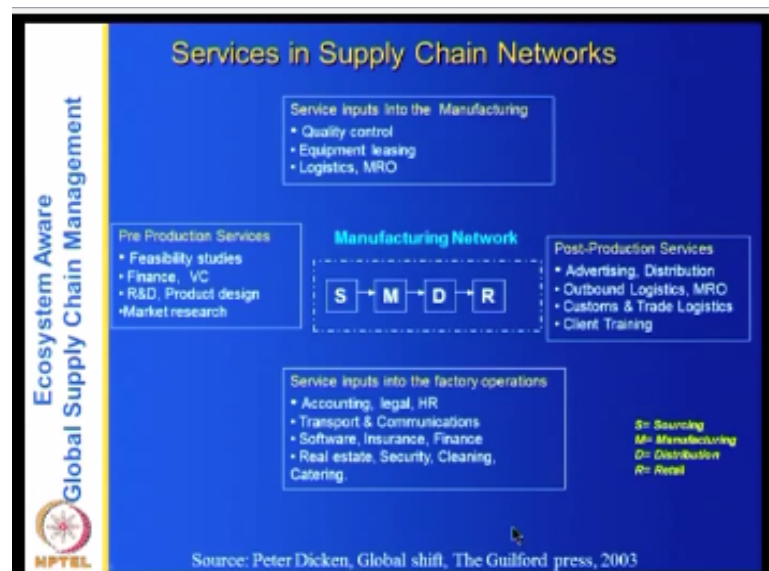
So these are all the very vital services that are needed before you actually start manufacture of this but if the particular product and the second thing that you have while you are doing in the manufacturing what are the kinds of inputs that you need the quality control how do you test whether your components are good whether they are following these specifications and they are going to be when you assemble them they are going to be modular tight products not loose coupled and similarly you could mentally say most of the equipment in the manufacturing is highly asset intensive and hence the equipment is leased rather than they are purchased.

And also the logistics the MRO maintenance repair and operations and the logistics that is involved both in the manufacturing as well as the inbound logistics that is from the suppliers to the manufacturers as well as from the manufacturers to the dealers and so on so basically they are the services inputs into manufacturing and services inputs into factory operations or the several one is accounting legal services human resources transport and communications software insurance finance real estate security cleaning catering and so on so there are various kinds of services that are needed in the factory operations and this and post-production services.

In other words after your product is made what are the services that you need advertising distribution outbound logistics that is taking this to the product to the dealers to the retailers and sometimes to the customers tomorrow is maintenance repair operations which is basically service logistics once the in case of repair or and the product recalls you have to get the products back to the manufacturer customs and trade logistics if you are doing international shipping and client training but they product sometimes you may have to train your clients how to use it how to use your product.

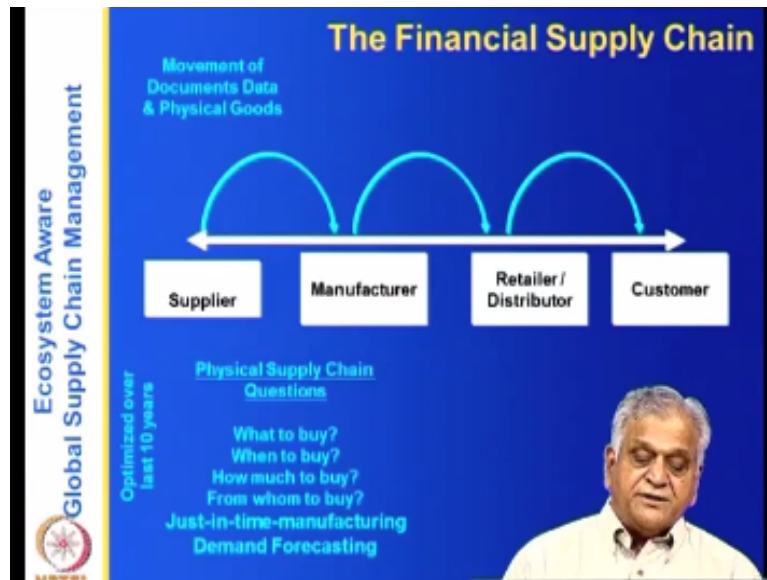
So you can see that there are several services and of course I didn't add here are the obvious ones like the information technology and there is the logistics accounting and other kinds of things so here you can see that without this the services they no can you this one cannot function.

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And one thing which we have already seen is the financial supply chain.

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As the product moves forward from supplier to manufacturer to retailers and customers I told you the money needs to move backward in other words from the customer to the retailer to the manufacturer to the supplier so you can see that financial supply chain is an important part in this it provides you the with the letter of credit it provides you there to the credit to the customers to buy the products and it is also provides the foreign exchange and other requirements in the global the global scenarios.

So the point I am making here is that although you are dealing with a manufacturing supply chain there are several services which are of vital importance to make a to interconnect this particular supply chains also there is one thing that is recently becoming very popular is the social networking among all the participants well social networking is again another service that is provided through I link Lee and Facebook and other kinds of things. So there are international networks which are being formed which are more useful in terms of services and others now if you look at what are the developments in terms of the transportation.

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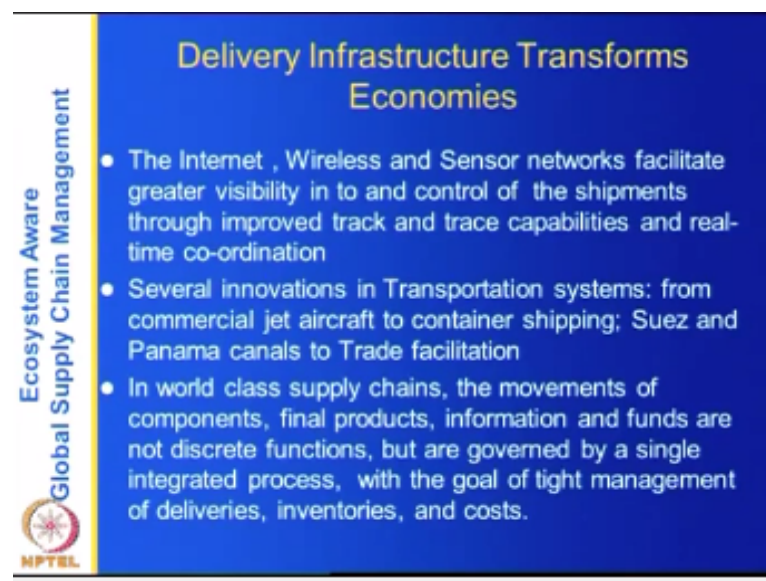
Is one of the services in this so the delivery infrastructure transform economies the internet wireless sensor networks facilitate greater visibility into and control of shipments through improved track and trace capabilities and real-time coordination now any shipment when it goes across countries like some shipment goes to from China and comes to us then it goes through several ports several players the changes several hats and it goes on several trucks and the internet design the sensor networks like RFID the wireless all facilitate the visibility to this is called track and trace capabilities.

If you have a container of shipping in case of container shipping if your products are in a container then you can trace the container and you can trace the ship Wyndham where the container is and find out where when your shipment is going to arrive for your put to your production site and also if you were Warner of all this then you can do the real-time coordination so several innovations in transportation systems have happened for example commercial jet aircraft or container shipping in other word for example people like DHL FedEx they have their own aircraft for transportation of their mails and there are switch on Panama canal's two facilities trade to trade facilitation.

Know for example the Suez Canal entitled Panama can all or they begin in a way biggest innovations in the logistics paths because they say with a lot of distance of shipping while transporting goods and there is the trade facilitation which is very common now in several port where the soft infrastructure is created in the ports - basically - to transfer offer facilitate transfer of goods in a faster manner and also in world-class supply chains the movement of

components final products information of fronts of not discrete functions it's not enough if you just transfer your components or the final products along with simultaneously you should transfer the information you should transfer the funds so but are governed by a single integrated process you should treat them the transfer of product codes information and funds as an integrated product with a goal of tight management of deliveries inventories and costs. So the delivery infrastructure becomes a final a fundamental this one that transforms the economies.

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**Delivery Infrastructure Transforms Economies**

- The Internet , Wireless and Sensor networks facilitate greater visibility in to and control of the shipments through improved track and trace capabilities and real-time co-ordination
- Several innovations in Transportation systems: from commercial jet aircraft to container shipping; Suez and Panama canals to Trade facilitation
- In world class supply chains, the movements of components, final products, information and funds are not discrete functions, but are governed by a single integrated process, with the goal of tight management of deliveries, inventories, and costs.

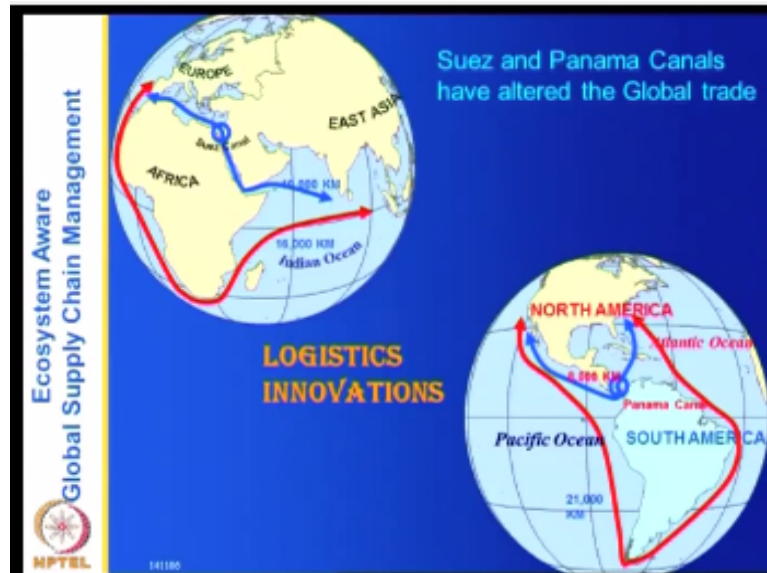
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So for example you can see in this particular diagram.

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There is the Suez and Panama canals and here you have the Suez Canal if the Suez Canal does not exist you have to go away or Africa the Cape of Good Hope now if you go Y off Cape of Good Hope in 1600 kilometers and if you go to Y R Suez Canal it is 10,000 kilometers so you are saving 6000 kilometers because of the Suez Canal and there is lot of traffic that goes via Suez Canal and similarly if you go through the Panama Canal here otherwise you have to go through South America and it is 21,000 kilometers whereas it is 8,000 kilometers if you go via the Panama Canal.

So you save something like 13,000 kilometers because of the Panama Canal and the Suez and Panama can also have altered the global trade basically they have become highly congested canals and of course along with these innovations came there were Somali pirates in the Suez Canal who are trying to track the ships and they basically create a lot of havoc in this particular region so but still apart from that the Suez and Panama canals have created a lot of traffic and also they say they have altered the global trade in this that is particularly between the Panama Canal to the US it has created. And also the Suez can all go to US and Europe now if you look at the kind of.

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Transportation networks that were created in the globally you can see from Hong Kong to Los Angeles there are ships sailing direct and you can see from Hong Kong to Houston and other parts in New York in the United States and you can see from Hong Kong to other places here and similarly from Singapore we are the Suez Canal to New York and others so you can see how many routes how many routes have come in this particular thing so the logistics trends and the impact of industrial real estate.

As it is called is enormous and there are several shipping routes which have come during the globalization regime in the 90s and the two year 2000 the first decade of year 2000 so but this diagram is a nice one showing all the their roads so the world so but what is high-performance trade logistics.

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So the quality and performance of logistics and research differ markedly across countries.

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So the logistics in India is different from in China is a different in the US and different in Africa and they trade competitiveness of these countries this difference is basically depends on

the logistics here these variations in time cost them from quality and cost of infrastructure services policies procedures and institutions so here what does the what does the variations in time and cost them from in other words if you are I mean the idea of trade logistics is if you are selling a container from a place say in India to do to the US or from a place in Africa to US or from Singapore to us what does it cost and how much time does it take so their variations at the time it is not the same I think it is from some places.

It can take 30 days from some other places it can take as low as one week so these variations in time and cost them from the quality and cost of the infrastructure services and the policies now we are going to see that the hardware infrastructure is only 25% in other words report the kind of infrastructure or the and the equipment they have is only 25 percent whereas 75 percent of this is in policies procedures and other things that is how many you know five you want to transport something across a port there are 100 and something hundred fifty direct type of different documents to be signed and authorized before anything can happen.

So this is the average of 150 documents which are need to be signed for example in Kyrgyzstan takes 93 days to export a 20 foot full container load container of carton a pro while in it takes only six days and in RBR the costs of trade related transactions for a 24 food container load container is including land transport from the wash in vessel to the factory gate the amount - slightly more than three thousand dollars whereas in Sweden it is little more than 500.

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## Trade Logistics

- The quality and performance of logistics services differ markedly across countries and significantly effect their trade competitiveness.
- These variations in time and cost stem from the quality and cost of infrastructure services and policies, procedures, and institutions.
  - In Kazakhstan it takes 93 days to export a 20-foot full container load (FCL) container of cotton apparel while in Sweden it takes only 6 days.
  - In Namibia the costs of all trade-related transactions for a 20-foot FCL container, including inland transport from the ocean vessel to the factory gate, amount to slightly more than \$3,000, and in Sweden to a little more than \$500.

So you can see the both the time and cost differences that occur and that determines the competitiveness trade containers of a country.

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## Differences In Logistics Performance

- Differences in logistics performance are driven only in part by poor quality of physical infrastructure services such as road, rail, waterways, port services, and interfaces.

So I just want to bring in where the institutions and policies come in into the menu are talking of global trade and what are the differences in the logistics performance different sense and logistics performance are driven by the part poor quality of physical infrastructure services such as a road rail waterways and ports services and their interfaces so if you have truckload I am just coming from the factory and it has to be loaded onto the ship now the truck has to go to the port and from there it has to unload.

Where there whatever it has on the truck and then upload onto the ship so those are the kinds of interfaces do you have services for transferring directly the cranes can it directly transfer from the truck to the ship then it is easy but otherwise if it has to put it on the ground and then upload it again take it and so on then it takes more time and more cost and most inadequacies often are caused by policy and institutional constraints procedural red tape poor enforcement of contracts and rules of engagement delays in customs ports and border crossings pilferage in transit and restrictive protocols our movement of cargo well these are the differences.

Which cause the logic in the logistics performance so you can see that there is what is called hard infrastructure which is the infrastructure like roads railways the portly cranes and all that and also there are the soft infrastructure which are the entry policy and institutional constraints when goods are crossing countries or sometimes these states so but the quality of delivery services as a major playing on the farms decisions about country to locate it in other words.

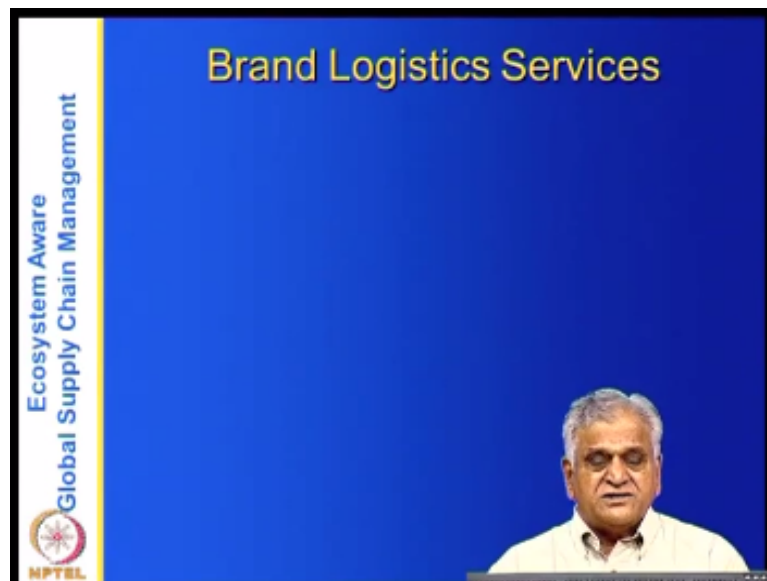
If you are a foreign this one and if you want to go into low-cost location China India or Philippines or whatever country how are you going to make your decision to locate him and or if you want to buy some components them or are you going to go to China to buy it or you want in the Earths abates or some other country to buy from and if you want to enter into a consumer market in other words you have some goods refrigerators you want to enter into a consumer market which country or you want to enter.

So then all this depends on the quality of delves delivery services in other words if you want to the road transport the rice transport and the shipping and also more importantly the rails regulations of the country where you're going to do it so the delivery services or has three components to it one is the infrastructure second one is a soft policies and regulations and third one is companies which are doing the delivery in other words there must be not just as companies which are efficient who can do the particular delivery so that is these are the three components that are needed and high logistic first and most particularly low levels of service

are barriers to trade and for a direct investment in other words their countries now which are facing this particular problem where there is the love of low labor productivity and bad infrastructure these are basically cited as the reasons for not entering into not attracting FDI in some of these developing nations countries with higher our logistics cars are more likely to miss the opportunities of FDI because the point is everybody is a company is in the market to make money so if they feel for you if it costs much more to reenter it to one country.

Then other and then it has a lot of policy hurdles then they may not be able to take the risk of entering those countries do this and countries with efficient logistics infrastructure such as Singapore and Hong Kong were targets of her menses or setting up facilities who have seen in the last few decades that these two places although there are cities are countries they have developed there were two never targets for immense ease because they have what infrastructure they have your infrastructure although their islands and people were able to transfer goods very efficiently and they become transit meant hubs so how do you create a brand logistic service this.

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If you want to create brand logistic services then you have a brand logistics provider then that is resources warehouses fleet of vehicles and containers so these are the resources that are needed to become a brand logistics provider the other one is support of financial institutions

who are letter of credit foreign exchange and insurance and credits see you should understand that a logistics provider is in the business of transferring goods from one place to the other it is one place is one manufacturer who is a supplier to another manufacturer who is an assembler so they are transferring goods now in the transferring the goods are highly valuable commodities there so when the supplier gives it to the logistics provider he has a letter of credit from the manufacturers bank and so the financial institutions are needed for the otherwise.

The transport will not take place and also insurance against any of these things that can happen and also they have to get their credits because if you are selling an automobile or anything people take loans to buy this so the financial institutions have to give credits to the customers so without is the logistics support basically disappears skill development centers you know logistics is a commoditized activity it is a it is a routine activity and with e.g. steps.

But it requires some skills so people have to develop you know have training centers where these skill skills can be developed for example the warehouse management the fleet maintain and so on and educational institutions for research because there are lots of new business models you have to find out the optimal location of warehouses which is an optimization problem for each day you have to do stretch will instruct services and maintenance and fixed space negotiation and allocation and so on so basically.

You have to these are all daily problems that the logistics provider faces and these are basically optimization problems and there you should have education situation support for developing the software for all this and of course this is a very important thing since you are dealing we have multiple stakeholders you have to have people with connections and also no mind knowledge should be talent with the domain knowledge in other words what does domain knowledge mean if you are a logistics provider for ATO your logistics provider for say heavy equipment transfer of boilers and all that you should have tremendous amount of no-mind the my knowledge in terms.

Of who are the big players if you want something how do you how do you get and I have connections with all these particular players so a brand and I just Explorer per hour has to have resources and to have support of financial institutions skill development centers and of course connections with educational institutions and software for various kinds of things like warehouse location to truck service maintenance and so on and also above all its management should have talent with domain knowledge and connections.



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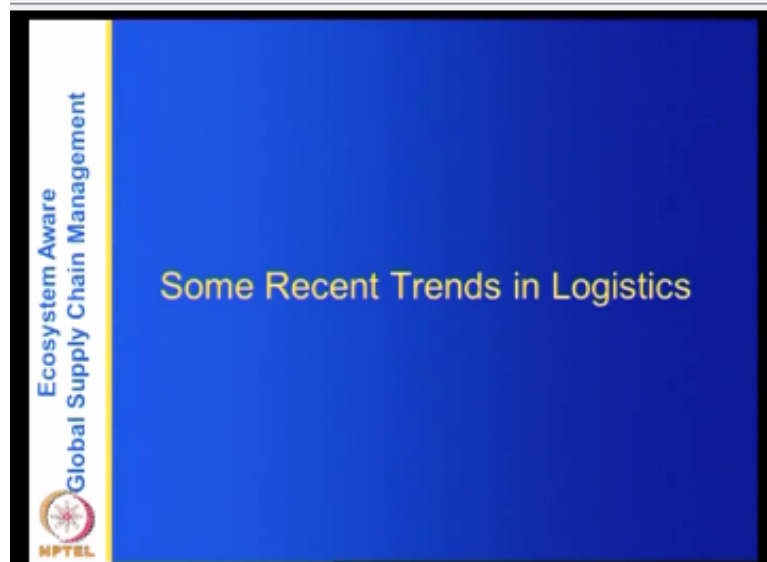
The slide features a blue background with a yellow title 'Brand Logistics Services'. A vertical sidebar on the left contains the text 'Ecosystem Aware Global Supply Chain Management' and the NPTEL logo. The main content is a bulleted list of services provided by a Brand Logistics provider.

**Brand Logistics Services**

- Brand Logistics provider
  - Resources: Warehouses, Fleet of vehicles, containers
  - Support of financial institutions for Letters of Credit, Foreign exchange, Insurance, Credits, etc
  - Skill Development Training Centers
  - Education Institutions for research in New business models, Optimal location of warehouses, Scheduling truck services and maintenance, Freight space negotiation and allocation, etc
  - **Talent with domain knowledge and connections**

So what are some of the recent trends in logistics?

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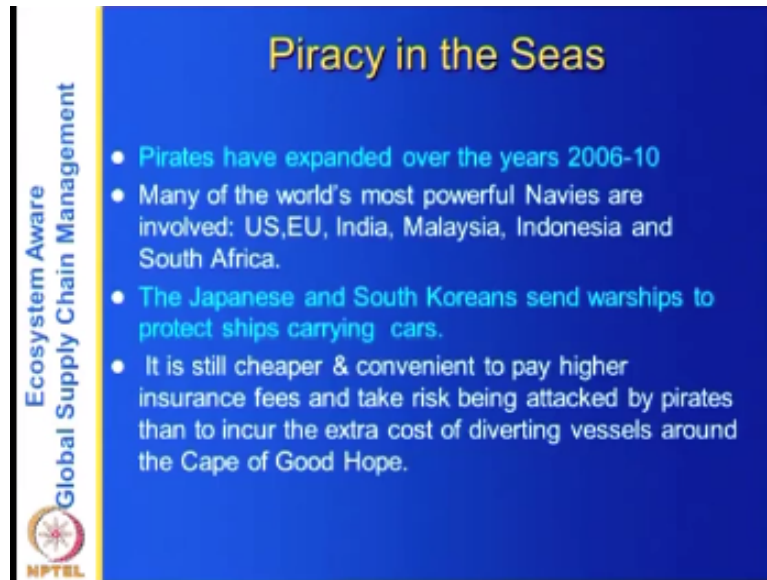


Some of the recent trends in logistics are very interesting one is there is the piracy in the seas for example I said before that the Suez and Panama canals have been the biggest innovations and then saved thousands of square thousands of kilometers of shipping and that has boosted the trade in this but the Pirates have seen these opportunities because it was via seas many of the world's most powerful navies are involved in basically have protecting their ships for example the oil that goes from various places for a Middle East to other places.

That is Somali pirates basically there they take the ships they take the people in the ship and the hostages and so on so many of the world's most powerful lobbies like us you India Malaysia Indonesia and South Africa there Navies actually there follow the ships this is the thing that this one it is like the army is following the ships to protect it from the piracy the Japanese on South Koreans and warships to protect ships carrying cause it is still cheaper and convenient then.

What people may ask is why then go through the Panama and Suez canals you can go where the South America or the Africa or the Cape of Good Hope but still it is still cheaper and convenient to pay higher insurance fees and take risk being attacked by the pirates then incur the extra cost of diverting vessels around the cape of good hope at least in case of Somali pirates they find that instead of going why are cape of good hope and spend another thousands of kilo meters in this it is better to pay the higher insurance fees because of the risk of piracy the insurance agents the insurance companies they charge much more then they admit it so that's what happens it is particularly.

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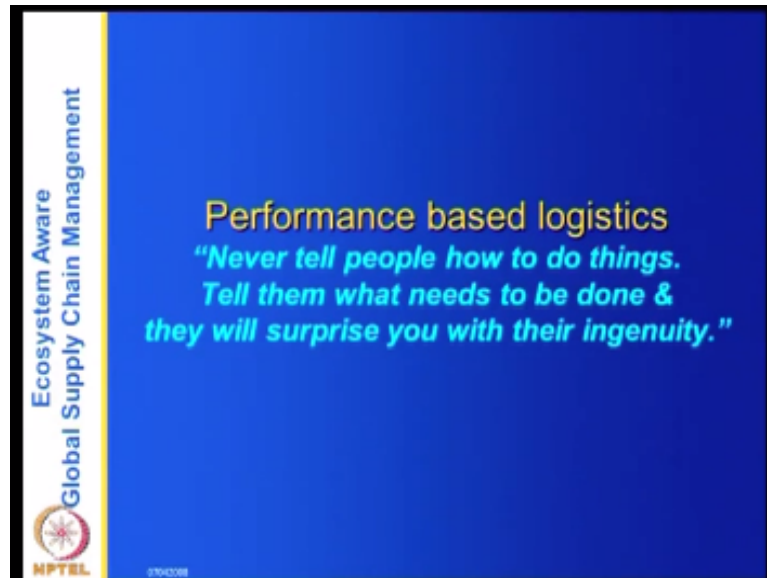
The slide features a blue background with a yellow title 'Piracy in the Seas'. On the left, a vertical sidebar contains the text 'Ecosystem Aware' and 'Global Supply Chain Management' next to a circular logo with a red star and the acronym 'NPTEL'. The main content area contains four bullet points in yellow text.

### Piracy in the Seas

- Pirates have expanded over the years 2006-10
- Many of the world's most powerful Navies are involved: US, EU, India, Malaysia, Indonesia and South Africa.
- The Japanese and South Koreans send warships to protect ships carrying cars.
- It is still cheaper & convenient to pay higher insurance fees and take risk being attacked by pirates than to incur the extra cost of diverting vessels around the Cape of Good Hope.

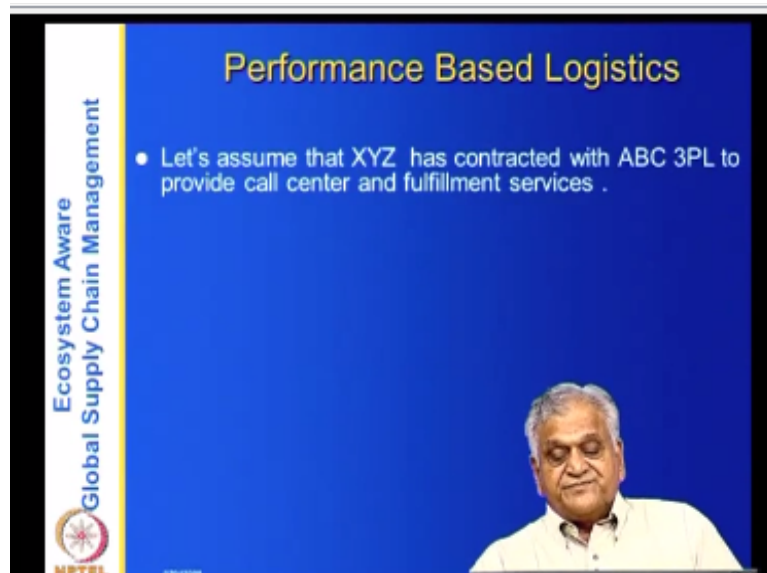
So and then the other thing that is happening is the performance-based logistics.

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So it says never tell people how to do things tell them what needs to be done and they will surprise you with their ingenuity but what happens in most of the times in logistics is you say you will deliberate at this particular time you take this kind of truck and deliver it by evening to that particular factory you take this particular route and you go oh this is these cities and so on but on the other hand this has the disability vantage surfaces.

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That is supposing you take a company X Y Z and it has contracted with ABC 3pl to provide a call center and fulfillment services right you have a company XY jet XY has contracted ABC which is a logistics company under the transaction based agreement having c-3po gets paid more they worse the supply chain performs how in other words I suppose to the 3pl of the logistics provider it is supposed to make a company more profitable the XY z-- aren't more profitable but it does not happen that way supposing X.

Which had forecasted too much that it is going to sell a particular product and what happens is the 3pl will mock more money by storing the excess inventory so since it had forecasted well then it will store a lot of money in the in the warehouse and once there is storage because it is the storage is priced trust felled a basis so the 3pl will make money and also what happens is if you cannot sell this particular product it will become obsolete and absolute products are to be destroyed and for destroying the obsolete product it will make money.

So the company exploit because of their forecasting error has to not only loses the particular product it cannot sell but it has to pay the 3pl for a year for storing in excess inventory and also for destroying the absolute product for disposing of the absolute products and so on so but why if supposing XY side has forecasted too little that is Intel wants to be careful and it does not want to carry too much inventory or does not want to have the problem of absolute products.

Then ABC gets discharged for finite so you are selling more so you have to basically yes ship or you have to have some other way of getting the product to the customers so if a bit cheap products are returned they make even more money so basically here is the is a condition where if you have a transaction based agreement you just deliver I will tell you what true then you may happen that you will pay more money to the logistics so nowadays.


What people are trying to do is performance-based logistics that is and a performance-based contract supplier is to assume a more proactive role in managing the customers supply chain beverage in the supply and demand gap. So basically it looks at your shelves of the retailers and find out what is selling and it will replace whatever is sold and it will remove once it doesn't sell for more than 15 days so the logistics provider is basically in world he's becomes a partner in the in the whole logistics business.

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## Performance Based Logistics

- Let's assume that XYZ has contracted with ABC 3PL to provide call center and fulfillment services .
- Under a transaction based agreement, ABC 3PL gets paid more, the worse the supply chain performs.
  - If XYZ has forecasted too much, ABC 3PL will make more money by storing the excess inventory. They will be paid to destroy the obsolete product.
  - If XYZ has forecasted too little, ABC gets to charge for expediting. If ABC's products are returned, they make even more money.
- Under performance based contract, the supplier is to assume a more proactive role in managing its customer's supply chain by bridging the supply and demand gap


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The second thing that is happening is logistics execution.

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## Logistics Execution via BPO

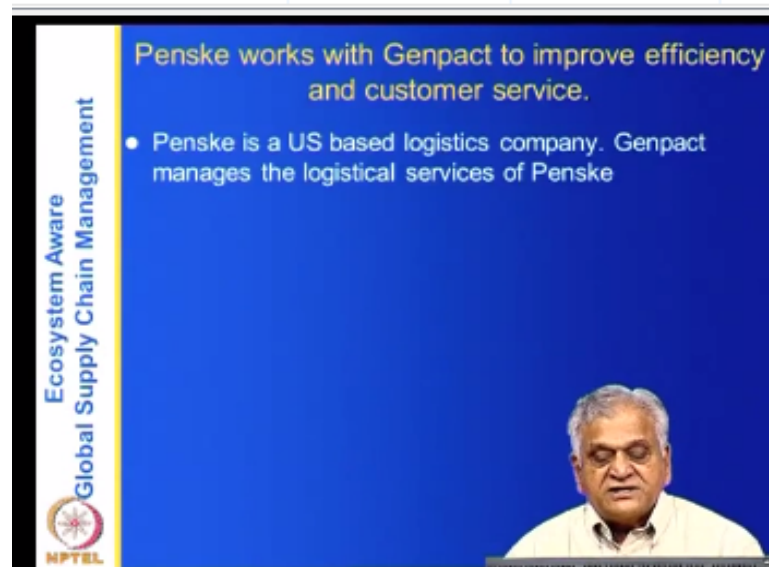
More efficient back-office processes and More responsive customer service


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Now if you look at logistics what is logistics it is basically delivering a product at the right time to the right place to the right customer at the right place at the right time at the right cost so you have this execution if we say any execution this one that is you say it is not planning any more it has you have to deliver the product that means it is an execution based a fire so what will happen if something does not who is going to plan the whole thing.

And what will happen if some truck fails and it cannot be delivered or what will happen if it had a port there is lot of delay what will happen in her to pay some fine somewhere and so on so more efficient back omic processes and more responsive customer service why are BP whoa a and there is one logistics company called Penske.

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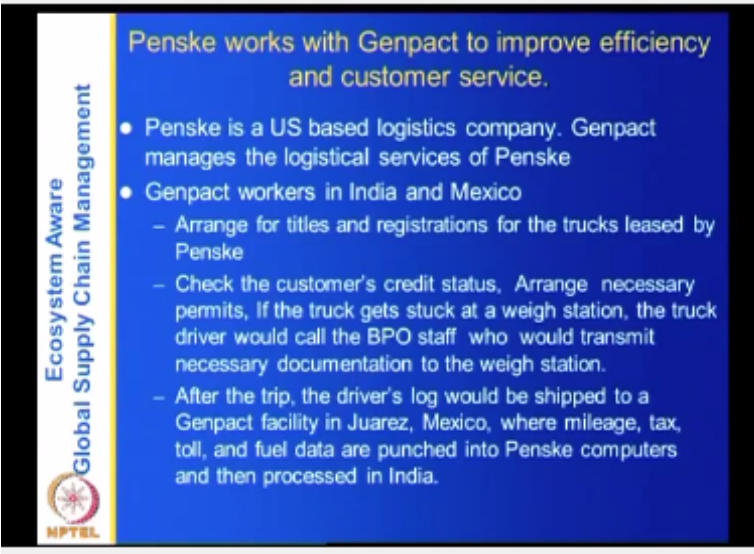


And it works with a company called Gen pact which is a BP whoa it has a very people to work improve the efficiency and customer service. So Penn Square is a based largest its company and Jan pack manages the logistics services of Penske Gen pact workers in India and Gen pact workers are in India and Mexico and arranged for titles and registrations of the trucks least by Penske now Penske is a company it does not want all the trucks it were may want some but it does not want all the trucks.

And it leads us the trucks from try out our Ford and other places so many titles and registrations are all arranged by Gen pact workers and their check the customer credit status supposing there is an order from a particular customer to transfer say 10 trucks how to transfer a particular material from somewhere in the United States and Millais polish to someplace in Detroit then they will check the customer credit status arrange the necessary permits that is if it is an interstate transport and if they get stuck at a weigh station supposing the truck gets stuck at a weigh station for some reason the truck driver would call the BP were staff it would not call the original this one who would has with the necessary documentation to the base station.

And if money has to be paid then the credit card is swiped by the by the BP was staff and after the trip drivers log in to log would be ship it to agent AK facility in Mexico where mileage tax dole and fuel debt are all punched into Penske computers and then processed in India so basically you can see that there is an outsourcing in addition to the outsourcing of the of the manufacturing logistics to a logistics company now justice company outsources to a BPO to for the execution and this is basically happening in the logistics industry to improve the education capabilities.

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**Penske works with Genpact to improve efficiency and customer service.**

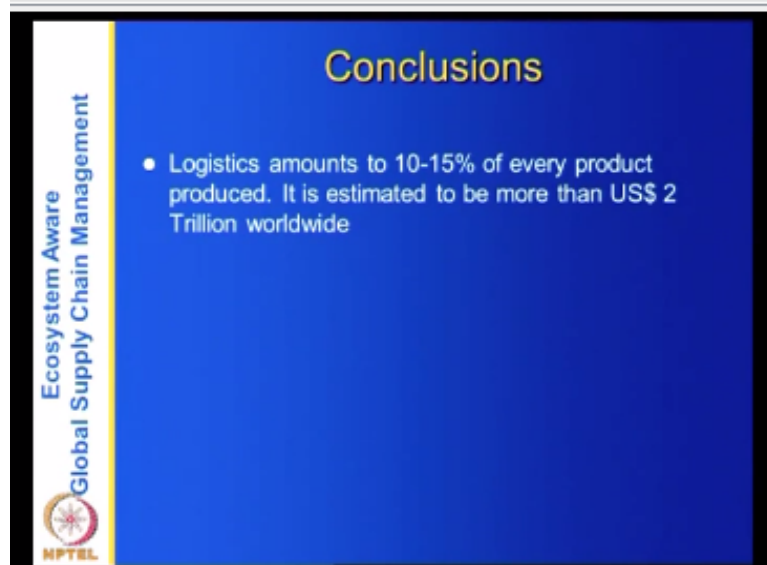
- Penske is a US based logistics company. Genpact manages the logistical services of Penske
- Genpact workers in India and Mexico
  - Arrange for titles and registrations for the trucks leased by Penske
  - Check the customer's credit status. Arrange necessary permits. If the truck gets stuck at a weigh station, the truck driver would call the BPO staff who would transmit necessary documentation to the weigh station.
  - After the trip, the driver's log would be shipped to a Genpact facility in Juarez, Mexico, where mileage, tax, toll, and fuel data are punched into Penske computers and then processed in India.

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Of this so they will conclude I just take someone to 10 to 15% I have ever product produced it is estimated to be more than us totally and worldwide.



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And the quality of delivery services have a major bearing on the firms decisions about the country to locate and also on the country's ability to attract FDI so it is very easy very important that the quality of delivery services or improve our infrastructure contributes only to 25 % of logistics productivity and other 75 % consist from soft infrastructure such as trade facilitation ice tea based execution and so on so we have dealt with some of these issues here.

And that is the delivery service infrastructure and execution becomes an important part of the supply chain here.

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## Conclusions

- Logistics amounts to 10-15% of every product produced. It is estimated to be more than US\$ 2 Trillion worldwide
- The quality of Delivery services have a major bearing on a firm's decisions about the country to locate in an also on country's abilities to attract FDI
- Hard infrastructure contributes only 25% of the Logistics productivity and the other 75% comes from soft infrastructure such as trade facilitation & IT based execution

Now we are going to look at the institutions.

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## Institutions and Supply Chains

That is another element in the ecosystem and their influence on the supply chain now here what are the influence of the institutions and supply chains. As we have seen in earlier lectures in global supply chains the inter country entry and exit through the ports and airports need to be managed to minimize lead times and admit well as we are going to see in the next lecture the performance of the supply chain is in terms of the cost lead times flexibility quality and so on so the lead times are the total times and the when in the global supply chain the time that is spent.

At the ports our airports is an important measure because it contributes to the lead time and also to the inventory means it increases the cost so that is one of the issues here so what are the important parameters for companies to register superior performance one is soft infrastructure everybody as I may have been emphasizing in my previous lectures also everybody talks of hard infrastructure like boards clearance warehouses and so on that is soft infrastructure like trade facilitation and the Internet clearances email eerie tailing these are all the soft infrastructures.

Which basically improve the productivity and customs duties and clearances free trade agreements and foreign direct investment restrictions a of course the customs duties or what you pay him a new import and also there is a clearance that is needed at the ports whether you can import that particular item or not and that that can create time problems and so on the free trade agreements are between countries there can be regional there can be global and it can be between two countries so there is the NAFTA which is a North Indian free trade agreement which is between Canada United States and Mexico and there is the ester.

Which is between the countries in South Asia and there are other agreements between countries like India and Singapore India Thailand and so on so basically this countries there are free trade agreements of this and their FDI restrictions which are typically followed the company cannot just enter any country and start investing or manufacturing and selling it has to take the permission of the government for example in India there are restrictions on multi-brand retail people can enter for single brand retailing they can enter to do dealerships.

But they cannot do multi-brand retail in this so and this is possible in some industries and some verticals it may not be possible some other countries it all depends on the country the local environment and so on but these are the rules made by the government and there needs to be

strictly followed the business rent unless enabling attitude and economic diplomacy or another country is the is the country business friendly in other words is there any problems associated with the company if the judiciary the legal processes or they are they're friendly to the foreign countries and also the enabling attitude in other words if you are a foreign this one what are the what is the attitude that that the society has the government has towards that company and there is the economic diplomacy use between countries or between company and countries where the people as a part of their foreign diplomacy or the country to country diplomacy.

The economic diplomacy is in terms of the foreign investments or the also a the human resource adjustments between countries in terms of the visas for employment of the people and from one country to another and also other people like labor unions which are becoming important this one they can go and strike or they can demand higher base industry associations because there are lots of associations automobile Association industry to industry chambers and other communities.

Which are which are which are important so there are important parameters for companies under the institution's so favorable institution environment reduces transaction costs suppose if what is favorable institution environment supposing whenever you enter there is a there is a cost in what in terms of not only taxes but also in terms of checking's you know if there is a checking at the border then it takes time or also time but both the they made delays and the inventory and so on so basically the institution environment which is favorable it will reduce the cost if you have unfavorable institutional environment.

Then to make it wearable there could be some transaction costs associated in terms of the coordination and all that so the institutions play a very loyal part in global supply chains so it is very important.

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## Institutions and Supply Chains

- In Global supply chains , the inter-country entry and exit through the ports and airports need to be managed to minimize lead times and inventory.
- Important parameters for the companies to register superior performance
  - Soft infrastructure such as trade facilitation,
  - Customs duties and clearance, FTAs, FDI restrictions
  - Business friendliness, enabling attitude and economic diplomacy
  - Labour unions, industry associations and other communities
- Favourable institutional environment reduces transaction costs

One has to take into account in terms of this one. So there are companies there people frequent talk of economic integration.

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## Economic Integration

- Two countries cooperate so that there are no *legal barriers* to the circulation of goods, capital and persons, and at the same time that there are negligible *economic & social barriers* (transport costs, intermediation costs, social factors)

What is economic integration two countries cooperate so that there are no legal barriers for the circulation of goods capitals and persons so these are basically in a country like United States or

in India? They have no legal barriers for circulation of goods and capsules across state and at the same time they are negligible economic and social barriers like transportation cost intermediation cars and social class but when you are crossing countries these legal barriers as well as economic social barriers were there so if you want to economic integration like European Union then these barriers are taken away and you can have free transport of goods capital and persons and at the same time you can have economic and not know not much of economic and social barriers.

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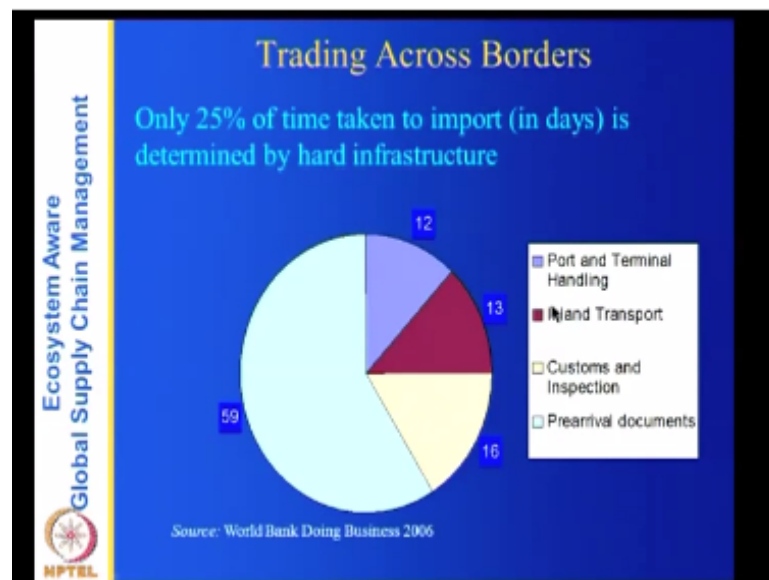


Now if you look at the cooperation between countries over the years there was 16 FES FTAs free trade agreements in 1999 and they have increased to 171 in 2009 so basically there is a an increase in terms of the agreements which are between countries why are why are these agreements are increasing that is because you know people realize that there is specialty involved in countries separation if a country has natural resources like oil in the Middle East then you do not have oil.

So here to import so you need to basically have a increment for import of oil between the middle-east and your tenting and similarly the story that if you have some human resources that that you have and the other country does not have so then to transfer human resources from one country to another and you require the free trade agreements so basically the issue is no country

has everything that is needed for the country's people so you have to depend on other countries and now the trend is to depend a tool to cooperate and make the lives of people more enjoyable so for that country there are basically free trade agreements of course! the big question is which country do you choose what is a free trade agreement for what we'll call that all depends on the policy or and also the study then depends on the geography of the country and so on so but suffice it to say that there is a definitely a move or a trend towards more cooperation among countries within the world. So I made this point yesterday.

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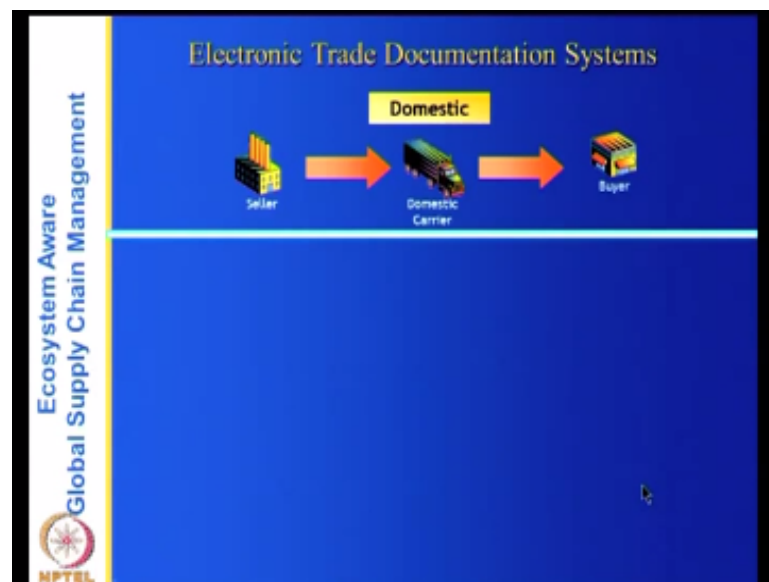


When I was talking about the delivery mechanisms yes that when you are trading across the borders 125 percent of time is taken to import is determined by the heart infrastructure so there are there is what is called a hard infrastructure that is port and terminal handling there it in learnt transport and customs inspection and pre-arrival documents then if you look at this is a worldwide document of 2006 the port and terminal handling the X 12% of time in LAN transport is 13 percent so total is 25 percent is for the hard infrastructure.

Like reports the currents the trucks and so on whereas the customs inspection takes 16 percent of the time and pre-arrival documents or takes 59 percent of the time so it takes 75% of time for the soft infrastructure this is where if you follow the trade facilitation and also get the pre-arrival documents simplify the procedures and the signatures that are number of signatures that

are needed for three arrival documents and you will save a lot of time and similar is it true with the customs and inspection so there're there are ways in which you can use modern technologies like sensor networks RFID tags and all that to basically go to the factory seal it there when they're loading into the container and once it is electronically sealed you can you need know how to inspect again at the customs and you can load it directly. On to the to the ship so thus minimizing the customs inspection times and so on but still it requires a lot of trust and faith between the companies and the and the country officials to basically reduce this 75%.

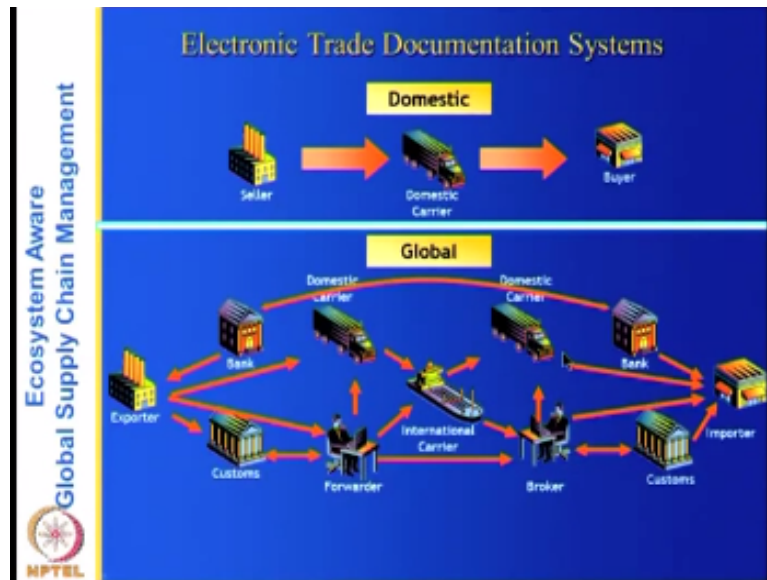
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And I look at the electronic trade documents for example if you take in the infantry the business is within the same country for example you have a seller and you have a buyer and there is a domestic carrier and it is going from one place to the other and the payments for the documents could be just one that is the bank could be the same for the both the buyer and seller located in the same country or in the same state. And also when the truck is moving all that the documents that are needed could be a single document but whereas if the truck is moving globally.

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Then you have an exporter exporters back customs officials right forwarder domestic carriers and then international carrier like shipping and then it has to go to a broker then domestic carriers on the other side Bank on the other side customs on the other side and goes to the importers so we on the average about 180 documents are needed here and they had to be transacted between all these people which is which amounts to about 12 to 20 players.

Who are involved in all this we including the exporters the customs the banks refer borders and carriers both domestic and international and the brokers so this is the kind of thing that basically makes the global trade a cumbersome exercise that is where 75% of the time is taken forgetting the document clearance rather than moving the materials and so on so it becomes very important that.

One should look at this the trade facilitation and to minimize the documents minimizing documents does not mean that you allow them free but you have to basically streamline the trade processes so that things are done properly as well as simply and efficiently. So we have efficient global logistics is more than brick-and-mortar infrastructure.

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So seven percent of the where trade is trade logistics seven percent of world trade is logistics cost. That is huge you can see that this one trade logistic costs are important as tariffs you know people they are worried about the tariffs but the logistics costs also as important these they say it is in current two point five tariffs percent of tariff each additional day and transport reduces probability us sources from that country by one to one point four percent that is very huge this one most developing nations expand their hard infrastructure airports highways ports excreta.

Wow look the other network components such as efficient customs clearance and quality trucking services and so on so it all becomes that that the trade logistics has to be made more efficient so you have two issues here one is the balance between brick and mortar facilities and policies and regulations and their enforcement so the processing times and direction on in meant three times which these people have so do you want to have the more brick and mortar facilities and policies regulations and their enforcement results in inconsistent processing times.

And reduction of inventory levels and so on so it is important to notice that efficient Global Logistics is more than brick and mortar infrastructure and the hard and soft infrastructure we are mentioning you need to be taken the account.

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### Efficient Global Logistics is more than Brick and Mortar Infrastructure

- 7% of value of world trade is trade logistics cost (UNCTAD)
- Trade logistics costs are as important as tariffs
  - Each day saved is equivalent to 0.5% tariff
  - Each additional day in transport reduces the probability that US sources from that country by 1 – 1.5 percent.
- Most developing Nations expand the hard infrastructure: airports, highways, ports etc. overlooking other network components — such as efficient customs clearance and quality trucking services
- Balance between brick-and-mortar Facilities and Policies, Regulations, and their enforcement results in consistent processing times & reduction of inventory levels.

So what are the visible barriers to trade?

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### Visible Barriers to Trade

There are basically import quotas a very transparent means of limiting the quantity of product that can be imported into the country you say you can import thousand cars in any year or you

can import a thousand cars and in a year or one lakhs laptops in any year run something some products of tariff rate quarters where if you import say 1000 then the it is free and one thousand to ten thousand then you had to pay some 10% XJ a state duty and if it is more than 10,000 to 20,000 you pay some other duty and so on textile food and steel or some other products that have quota restrictions that is because there is the local consumption because of the local consumption if people are given an opportunity they might want to trade outside that is because it is more advantageous or to trade into from with other countries.

There then locally and so on so and voluntary export restrictions what happens is quatrain trade is imposed by exporting country at the request of the importing country the government this is between the countries instead of always saying import quotas you can say I want import the country can say I will not should not import more than ten thousand pieces you should not import more than thousand cars because it will affect the local companies. So basically these kind of voluntary export restrictions are given in industries like cement steel and all.

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The slide is titled "Visible Barriers to Trade" in yellow text on a blue background. On the left side, there is a vertical yellow bar with the text "Ecosystem Aware" and "Global Supply Chain Management" in black, and a logo at the bottom that says "HPTCL". The main content consists of two bullet points in yellow text:

- **Import quotas**
  - A very transparent means of limiting the quantity of product that can be imported into the country.
  - Some products have tariff rate quotas where in quantities in excess of the quota are charged a higher duty rates
  - Textiles, Food, Steel etc are some of the products that have quota restrictions
- **Voluntary Export Restraints**
  - Quota on trade imposed by the exporting country at the request of the importing country's government

So on invisible barriers there are lots of invisible barriers which are not apparent and the countries would not say that but they are there and that is the government governments are the largest purchasers of goods and favor only domestic producers so all the indirect goods purchase like paper way computers office equipment and so on there is a huge expenditure for the

government. And they are purchased only from domestic purchaser that is basically you know an invisible barrier to trade that is there basically February the domestic companies local content requirements product standard standards import licenses or subjective you say local content for example is people say country of origin or no confine difficult to identify where the products are made when the production process causes several turns you say it is made in India you say it is made in China it is made in Taiwan and so on but it has never thick has crossed several countries and has crossed the hands of several companies.

So the country of origin is that country where article is his mind grown and produced or manufactured but if the production process took place and different countries country of origin is where goods underwent substantial transformation so then the subjective thing is what is substantial transformation and one example is jeans were shipped to Mexico and Paul Canaan woman and returned to us here since bulking was done to fix the dye the quote roll that jeans went through a substantial transformation.

So if dyeing is substantial transformation so it is so the country of origin in this particular case of jeans Macon's Mexico so depending on the country origin the import duties and others change so there are lots of invisible barriers to trade that happens.

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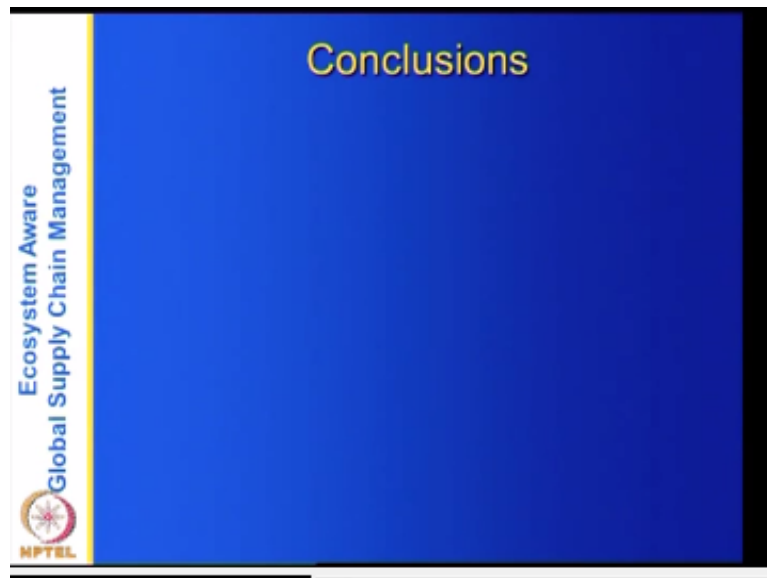


## Invisible Barriers to Trade

- Governments are largest purchasers of goods & favor domestic producers.
- Local content requirements, Product safety standards, Import licenses are subjective
- Country of origin: Difficult to identify where products are made when the production process crosses several borders.
  - The country of origin is that country " where an article is mined, grown or produced or manufactured".
  - If the production process took place in different countries, country of origin is where goods underwent substantial transformation
  - Jeans were shipped to Mexico and baked in an Oven and returned to USA. Since the baking was done to fix the dye, the court ruled the jeans went through substantial transformation

So you know in other words if you if you look at.

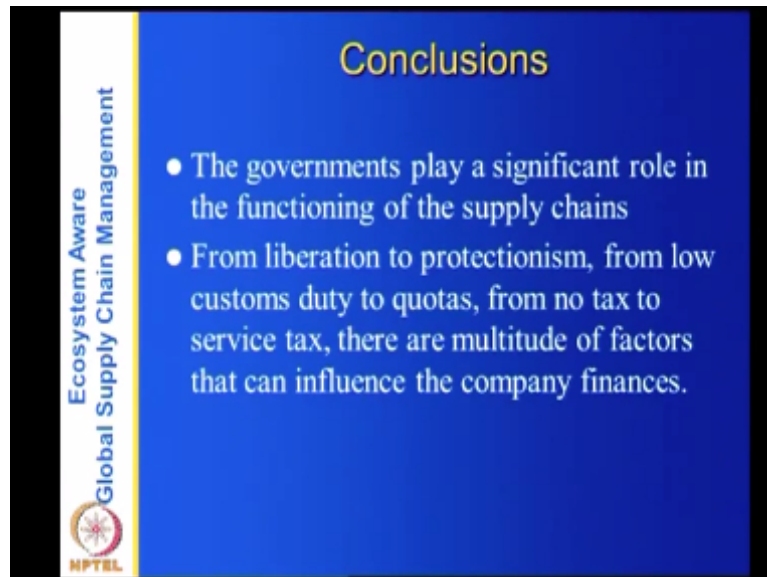
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What is happening in the government's play a significant role in the functioning of a supply chain not only the import duties not only the wallet recorders not only providing the pass here to this one business friendliness atmosphere to the companies. To come in and survive so it becomes they play a very significant role in this and they can they can basically play a proactive role in making things simpler and making the business making the environment more business friendly.

And so on so from liberation to protectionism from low customs duty to quarters from no tax to service tax there are multitude of factors that can influence the company finances now after all one should remember that everybody is in a business to make money and what happens. If the entering a particular country means making losses then no company will enter into that particular country so it's both in the interest of the countries and the company that the institutions play a positive role which is which is which benefits both the country as well as the company so we have completed this there are four factors that is a supply chains the resources the delivery mechanisms and the institutions and their role in making the in the functioning of the supply chain.

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