Course on E-Business
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Module 04
Lecture Number 22
Supply Chain Management - V

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In continuation with our last lecture, we are going to talk about how exactly this

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supply chain, because of this e-commerce activities, what is the effect on the supply chain.

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In this regard, we are going to learn about the distribution of digital goods, then different kinds of distribution, direct, indirect and hybrid, then we are going to discuss about various distribution network options. Then we are going to also know about a specific phenomenon which has happened where e-commerce has a major role to play is your on-demand production.

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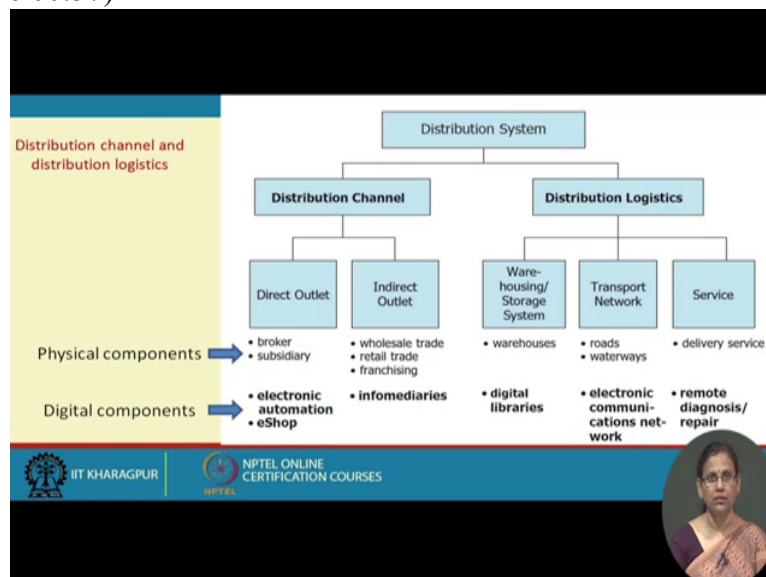
So if you look at the, for the digital goods, if you look at the distribution system, actually now digital goods are no more distributed through your c d drives and all, you can directly download from, download them from your, from the software repository of the specific company. Now if you look at the distribution channel of such products, it can be either a direct outlet or it can be through some indirect outlet. By direct outlet we mean it has to be

sent through either some broker or some subsidiary. And see when we are talking about the digital goods, digital goods itself can have some physical pack and similarly some physical goods can also have some digital pack. So when we are talking about the

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distribution of, distribution of products whether it is digital or physical through the, through certain distribution channel we can have some physical components, we can have some digital components. Now coming to these physical components the direct

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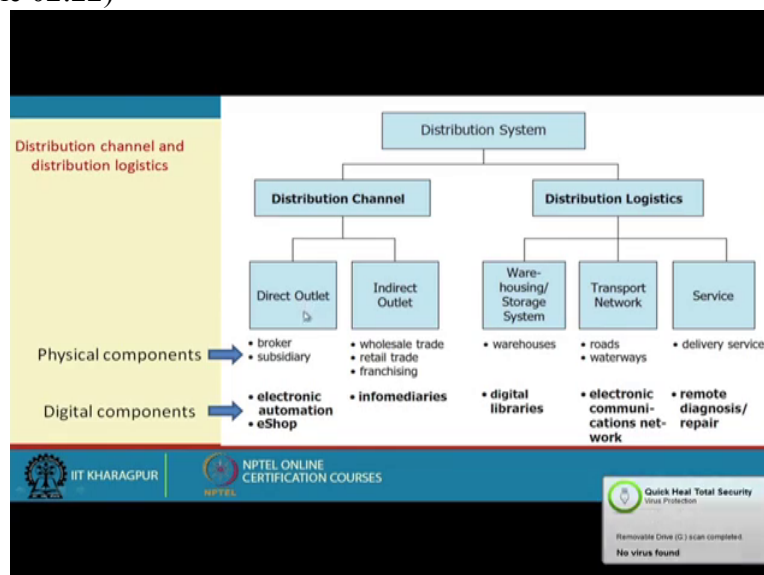
outlets could be the brokers and subsidiaries, for digital components it is actually electronic shops. Then if we look at the indirect outlet, it can be, for the physical components, it can be through the wholesale trade, it can be through the retail trade, it can be through the franchisee

operations and for the corresponding digital components it can be infomediary who are the in-between, intermediaries, who are the intermediaries for digital components.
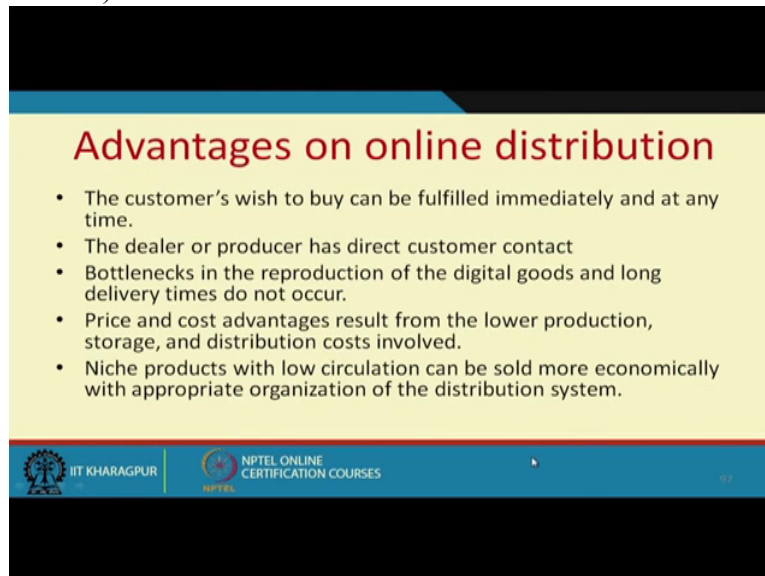
Now coming to this distribution logistics, for the physical components you have warehouses, for digital components, digital elements you have correspondingly digital libraries. If you are ever downloading any scientific articles from digital site, for example your I triple E or S C M digital library, so if you are downloading them from the digital library those are the examples of the, similarly for songs also where you have repository of songs those are the examples of digital libraries which are equivalent to the corresponding physical warehouses. Then you have, then you have your transport network. The physical components are roads, waterways, maritime logistics and so on. And your corresponding, of course for your, moving the digital components your digital communication network is the medium. Similarly for service, you have to be associated many delivery services along with your physical goods so also with your digital goods. That includes having facilities for remote diagnostics and repair.

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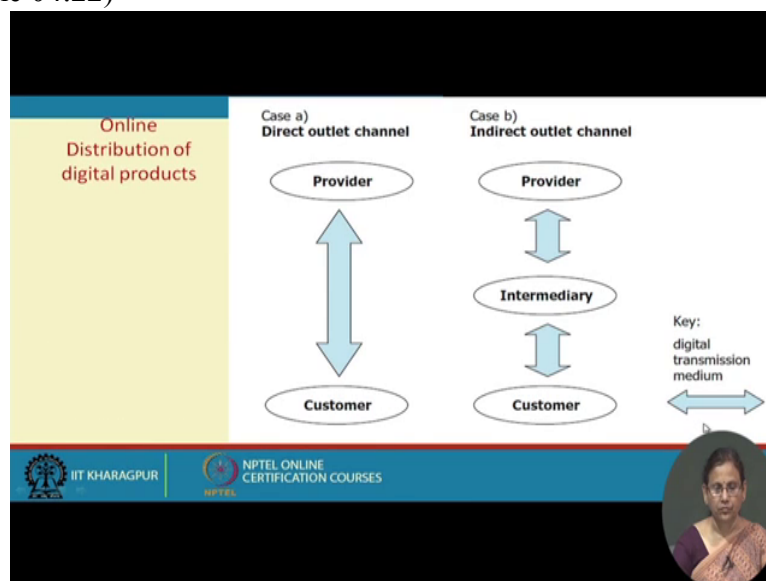
Now if you look at the distribution of digital products, by direct outlets, the provider whether it is a manufacturer or it is a reseller, directly contacts the supplier. In case of indirect outlet the provider provides the service, product or service through some intermediary and the intermediary contacts the direct, contacts directly to the customer.
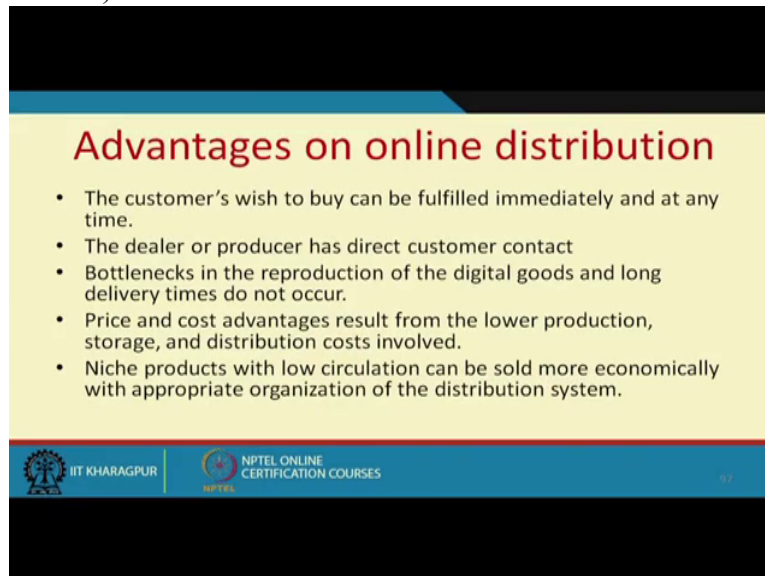
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Now what are advantages of online distribution? Here the customer's wish to buy can be fulfilled immediately at any time. Of course for physical product it may not be possible but with Amazon logistics and all, they are even thinking of delivering the products, even

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physical goods within an hour using various advanced technology including the drones. Then the second advantage is the dealer or the producer has direct customer contact. And thirdly the bottlenecks in reproduction of the digital goods and long delivery time

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do not occur which is typically true for physical good. And because you are directly transmitting it through the, digital goods, transmitting the digital goods through the telecommunication, your computer networks, through the internet, naturally the price and cost is lower and because easily these digital goods can be, can be,
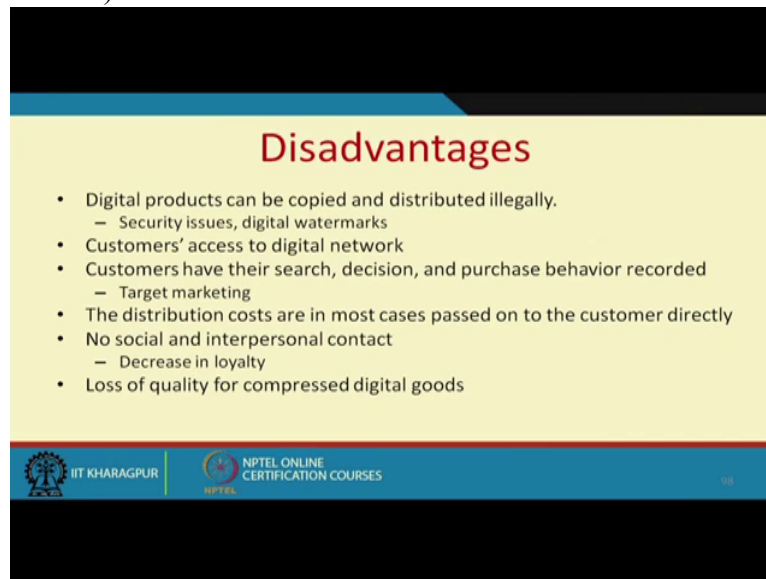
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can be you know reproduced. The cost of production is also very low in handling these digital goods. Then for the niche products which, niche products is usually targets a small, specialized market. So if it is for the niche products, earlier both for physical and digital distribution, it would have been, extra marketing effort would have been required for that and that, even if it is small segment company has to put a lot of, lot of both monetary as well as physical effort in contacting the customers and delivering the goods. But right now, because

of this online distribution, easily even for the physical goods the companies can reach to the target segmented, targeted segment in least time as well as it can also be more economical in case of digital goods.

There are many disadvantages as well. And it is

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specifically true for digital products. See unless otherwise proper security and concerns are not managed properly, these digital products can be copied and distributed illegally very fast. Then the second problem is actually the customer's access to the digital network. Of course now internet has almost become pervasive but there are places where the internet access may not be available. In those cases, in those places actually physical, even the distribution of digital goods through physical medium is desired. Then the customers, when they download the product, they directly or indirectly provide large amount of information about themselves. While either filling up the questionnaires or while they, and the companies can, through the cookies companies can record their search behavior and the customers may not like that their data is being used again to track them

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for some kind of

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personal contact for off selling or cross selling etc. Then the distribution costs are in most cases, are passed to the customers directly. This is true

in case of both physical as well as digital goods. In case of physical, digital goods the customer, because of; because he is connected to the internet, he has to at least pay the cost of maintaining that connection. That bandwidth will be used from the customer side. So naturally the customer actually pays indirectly for the distribution cost through digital communication network. Similarly in the physical medium, distribution cost is additionally, besides the cost of the product, the distribution cost is also additionally charged many times to the customers. Then because of this digital communication with the customer the direct personal contact is lost and many times it is seen that because of this loss of contact there is decrease in customer loyalty and customers many times feel that he is not able to get right service through this digital medium.

Then specifically for digital products when they are transmitted, when they are distributed through the digital network, through the internet they are compressed and when they are, getting downloaded they are again uncompressed. And because of this there is loss of quality of the digital good. So many people, even if it is available on the internet and if this, there is a loss of quality, then they would like to get it through physical distribution channel. Even the digital goods, they would like to get through the physical distribution channel.

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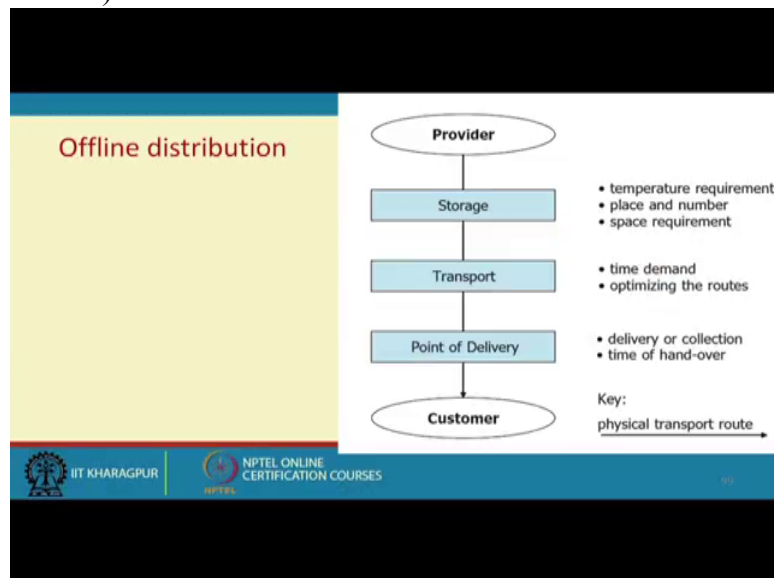
Now in case of offline distribution, the provider actually sends the item to some warehouses and then there has to be some transport facility and then from the point of delivery, the customer, from the point of delivery either the companies can, the person from the company can directly contact the customer and give the goods or customer can get it from some already specified location. So unlike your corresponding counterpart of brick and mortar businesses, here actually the customer has the responsibility many times to go to the store and collect it where as in case of physical, in case of brick and mortar distribution system the customer has to go to the retail store and get it. But here in case, sometimes it is handed over to the customer and sometimes the customer can go and collect it from the delivery point.

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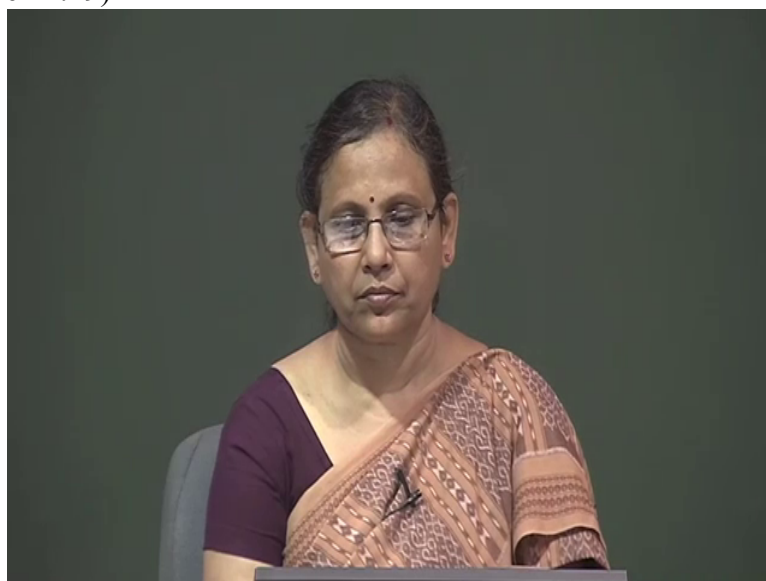
Now as I have told you many times a digital product also has one physical part. For example think of a printer. When you buy a printer, corresponding printer drivers come with the printers. But many times they also provide you of the option, why many times, even if suppose your printer is, your software is corrupted something you can actually download the software from a specific location from that printer's website. So this is just one example of printer. So besides that, for other products as well, even if there is no software part, the documentation, the product documentation can be downloaded. Therefore companies are using hybrid channels in which the physical product will be coming through the physical channel and the digital part of the physical product can be coming through the digital channel. So they are, in case of the digital part of the product, either it can directly be downloaded from the company's website or it can be obtained through some intermediary. And similarly for the physical product you have to come through the appropriate supply channel.

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Now we are going to see that what are various design options for distribution network. Though we are talking it in the context of e-commerce kind of distribution where we expect one of the, one of the supply chain member is actually in e-commerce business

but it is this kind of design option is now true for almost all kind of products because every product nowadays has their own way of contacting the customer through a B 2 C kind of, through some kind of B 2 C transaction, whether it is directly from the company or it is through some reseller or intermediary they have always, every company most, at least to the companies which are dealing with direct consumer goods, I am not talking about the industrial products, who are directly talking with the products which are related to the end customers, they have such kind of, they have adopted either any one or multiple of such distribution network options.

Now let us go one by one among them. So first one is your manufacturer's storage with direct shipping. Now look at this.

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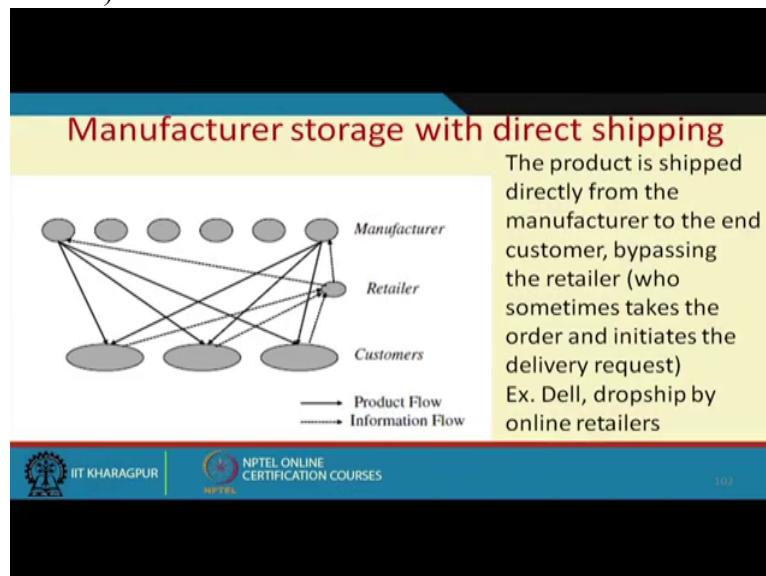
Here we have these dotted lines represent the information flow and these solid lines represent the product flow. So the diagram shows, in this particular model, this manufacturer storage with direct shipping option, how exactly the product and information flow. Now in this model the product is shipped directly from the manufacturer to the end customer bypassing the retailer. By bypassing we mean either the retailer is not there

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or retailer job is only to take the order.
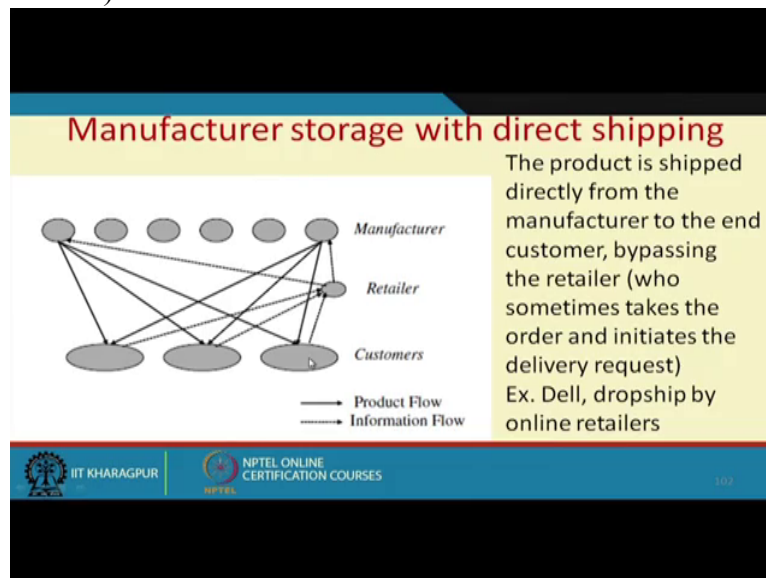
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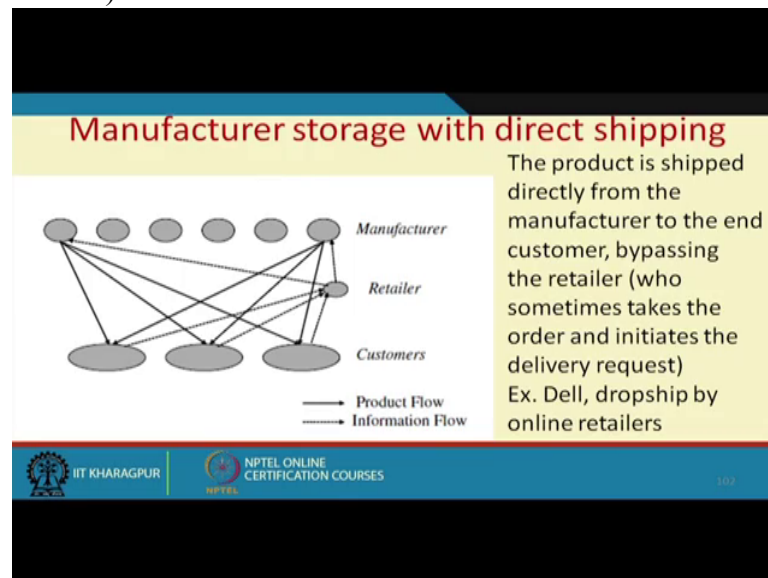
So what happens, you can think of the Dell, you can think of a company like Dell who directly deal with their customer. They may not have one retailer in between. So in this model, the customer directly places its order to the company and the company delivers the item to the end customer. Similarly
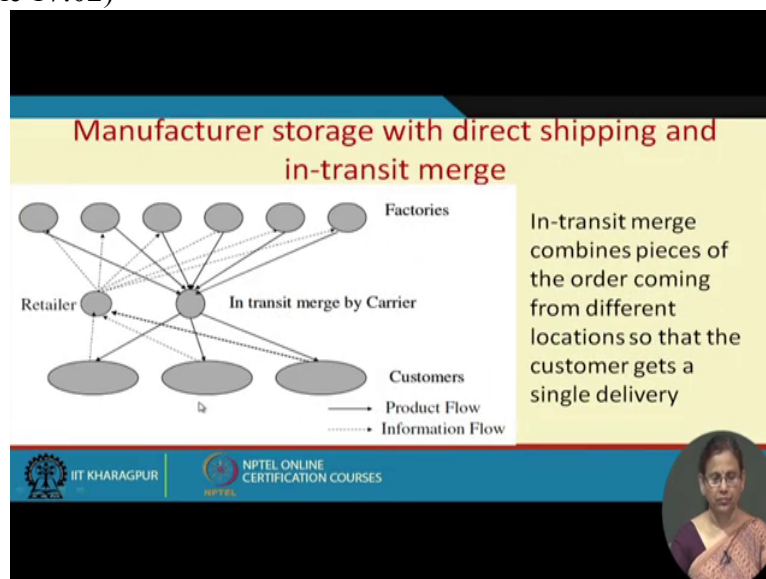
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you can have the other online retailers like that of Amazon et cetera who will be

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taking orders from the customer but they might be adopting some drop ship option where they will simply divert the order information to the manufacturer and then manufacturer directly ships the product to the customer.

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Then next one is your manufacturer storage with direct shipping and in-transit merge. Look whenever you are placing any order

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in the internet, you may not be placing order for one item. Think of sometimes when some mega sales are going on. You will be buying product and putting it in your shopping cart from multiple categories. So naturally one of the, I mean all of them are not produced by one manufacturer. So what happens, they will be produced in different factories and you will be placing

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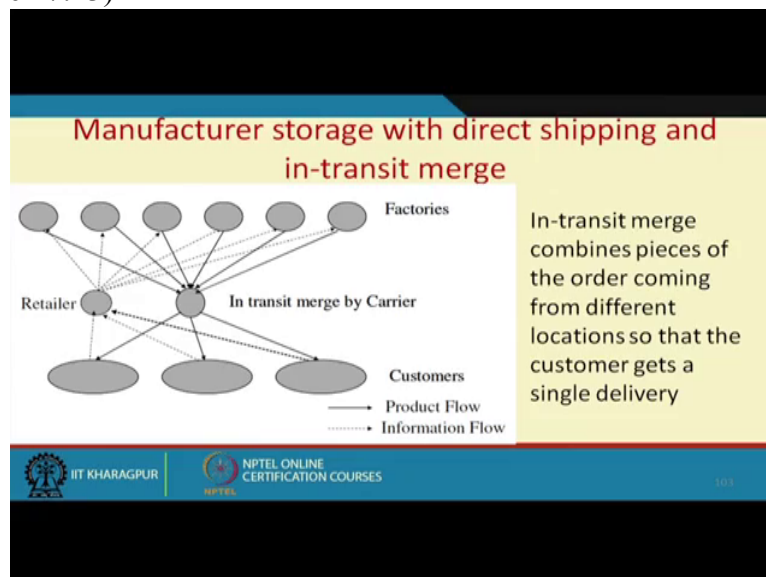
order to the retailer. Retailer in turn will contact various factories but the items, all the items which you have ordered may not be directly coming to the, will not be directly coming to the retailer. They will be coming to some place where many, the carriers from

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many factories will be coming and the items meant for one customer will be merged together and then distributed. And this can also be, this model can also include the idea of incorporating the group of products belonging to a similar, to a, to a particular region and getting items together for those group of customers. Now look at

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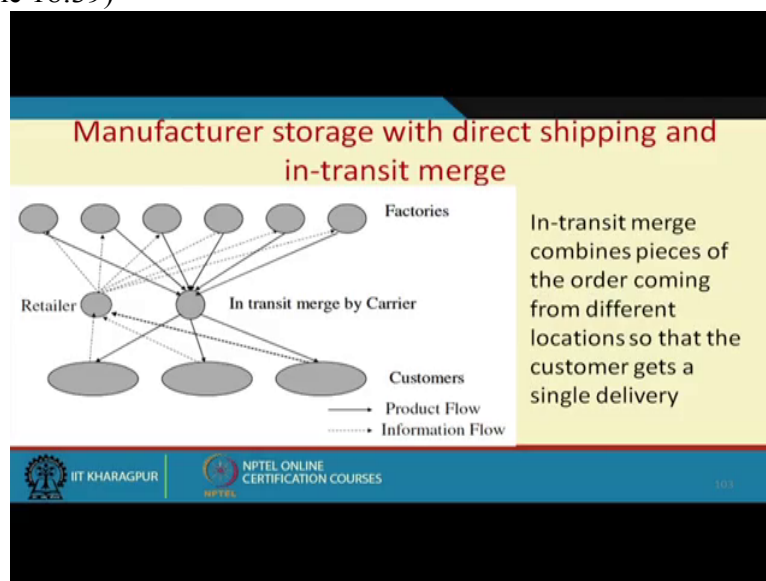
the product and information flow. Information flow, the customer, customers actually directly contact the retailer but, and retailer in turn sends the information to the factories. Factories send goods not to the retailer but they send the products to some transit location and from that transit location the carriers carry the products, put together as a single delivery for individual customers.

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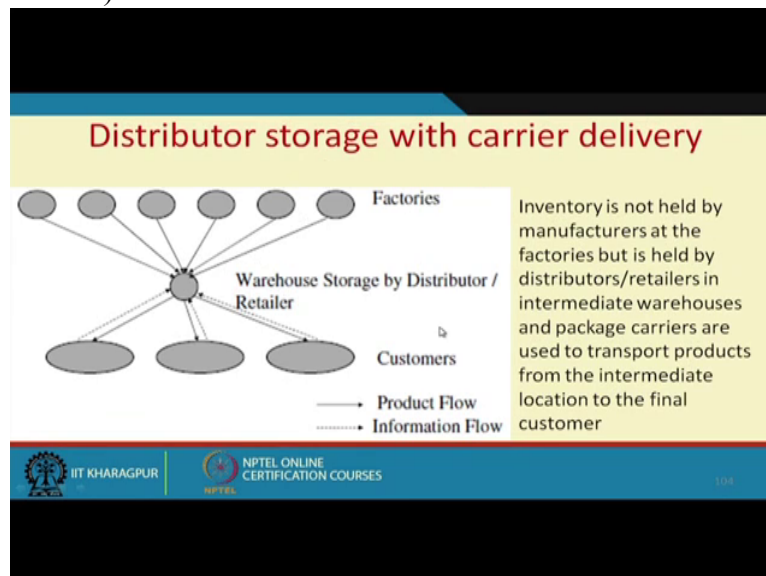
Then the next option is distributor storage with carrier delivery. So in this option the inventory is not held by the manufacturer at the factories but it is held by the distributors, retailers in intermediary warehouses and packaged carriers used to transport the products from intermediate locations to the final customer. So the customers might be contacting the, contacting the online retailer. But this online retailer will have his own storage houses, or it can take help of certain other distributors, other distributor's warehouse where he will be first getting the products from the factory, then it will be put, then the packaged carriers will be used to deliver this to the customer.

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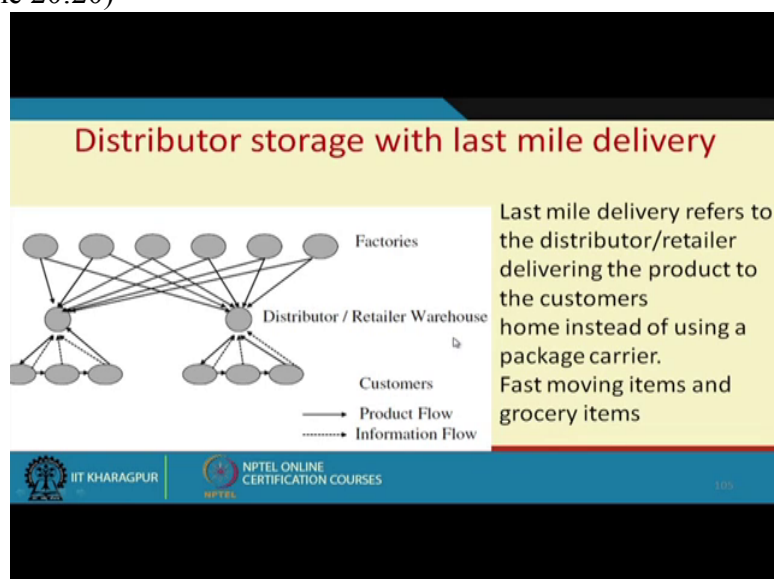
Now this is again another similar option but there is certain subtle difference that we are going to see. So this particular option is distributor storage with last mile delivery. So here the
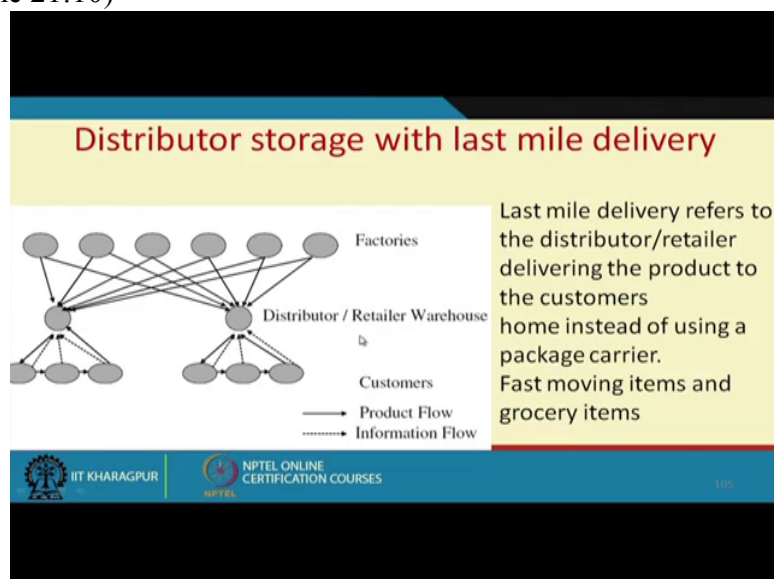
distributors or retail warehouses, they will be getting the items directly from the companies but these products will be delivered directly to the customers without help of any packaged

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carrier. So the packaged carrier is not there. The direct, your distributor retailer
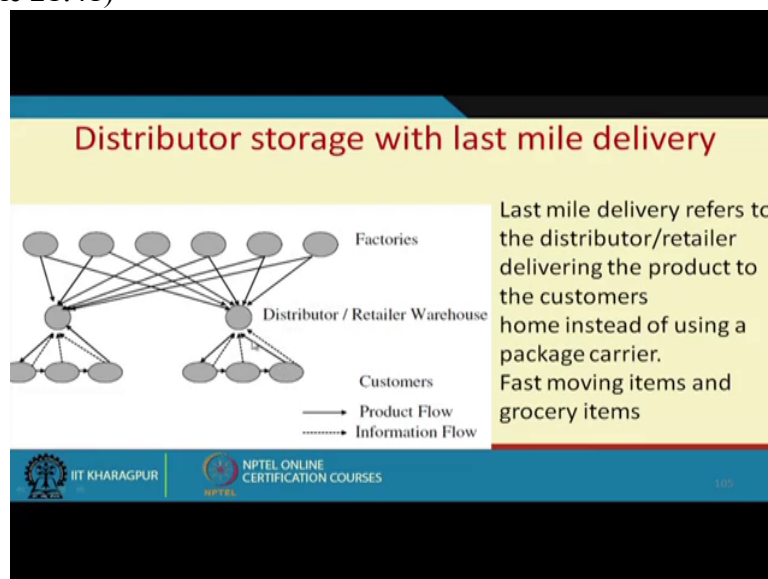
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using certain intermediaries, they actually directly contact the customer and deliver the item. So this, using in this last mile delivery
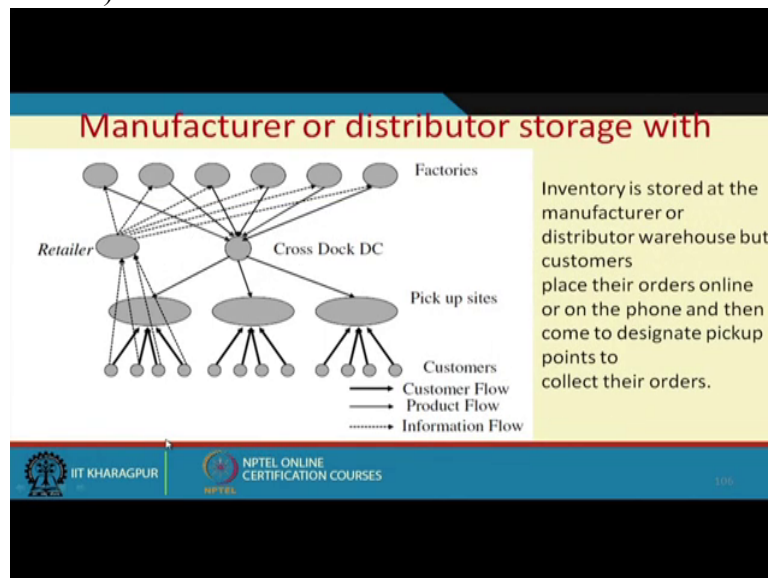
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is actually suitable for most fast moving items and grocery items. You will be placing the order to the retailer, just think of a grocery delivery system. You will be, to some online retailer you will be putting your order. The retailer will be getting the items

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from various places. Then he will be packing it together and they will be delivering you directly and they will not be taking help of any intermediary carriers.
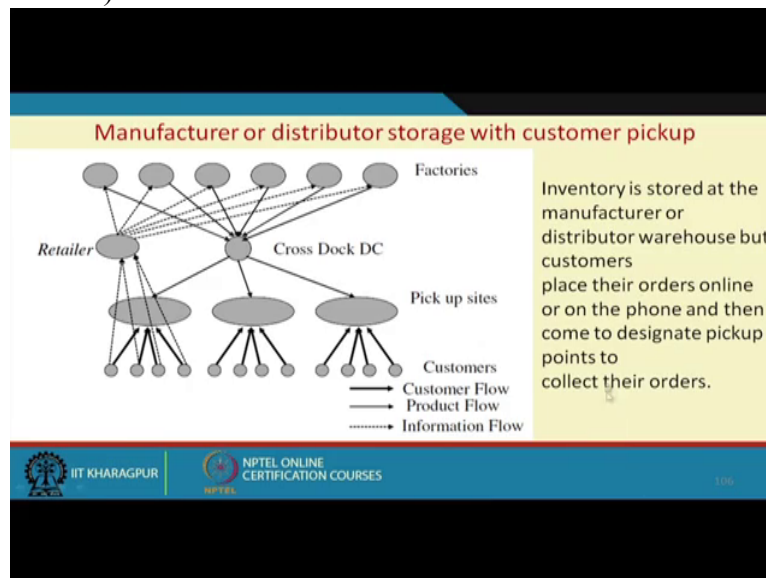
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Then this is the, this is another option where manufacturer or, then the manufacturer distributor, they have storage and from this storage, the customers can pick up the items.

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So here in this

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particular model, the inventory is stored at the manufacturer or the distributor warehouses but the customers place their order online either through web or through telephone. Then they come to the designated place pickup sites. So which means additionally the retailer has to maintain certain pickup sites. So either the item can directly come, I mean the look, what is happening. The retailer himself does not maintain any warehouse. Items come from various factories to some cross dock and then from that cross dock distribution center, they will be sent to some kind of pickup sites.

So in this particular model, the problem is the retailer has to maintain a number of such pickup sites distributor across a specific region. So for small group of customers, it will be maintaining a pickup site. So this, the retailer that way incurs some kind of additional cost. In case of online retailer, of course this might be the only, this might be good option but in case it is a physical retailer as well, it can have its own store. So besides his own store he has to maintain all these pickup sites. So most of the time, your this is a very good option for the retailers who already have this retail store where the customers can directly come to the retail store and pick up. So in case they directly come to the retail store for pickup,
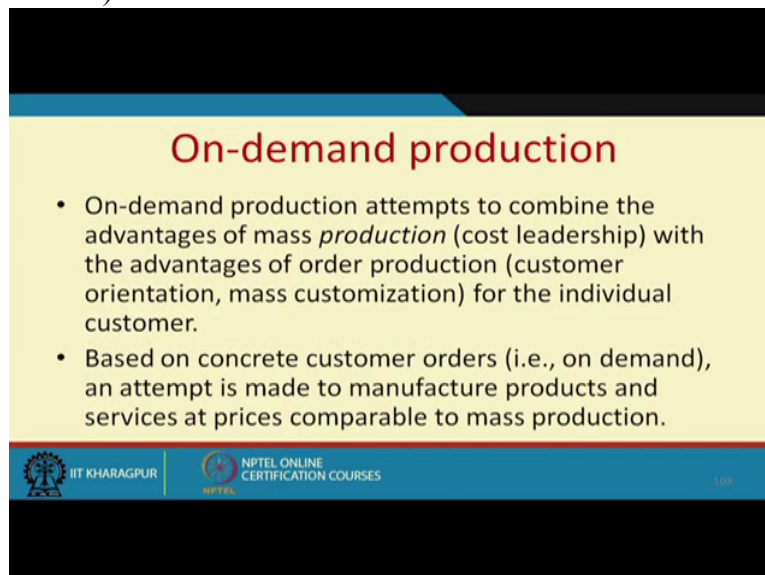
so this particular model is called retail storage with customer pickup. In this particular model, this is similar to the earlier model but the difference here is retailer does not have to maintain a special pickup location for small group of customers. Customers can give order online but they will be directly coming to the retailer's place for picking the, retailer's store to pick the items. The retailer because he has already got the order, he will be actually packing and keeping everything ready so retailer just comes in and gets the, collects the item.

Then another very important phenomena has happened because of the internet. So this phenomena is called on-demand production. So in case of on-demand production which is,

which is different from mass production. In case of mass production for one product was cust (()), one product was made for the

entire group of customers. But in case of on-demand production, there is, the concept is the mass customization. In fact while talking about your e-marketing et cetera, we were talking about the mass production and mass customized production. In case of mass customized production,

individual customers can actually ask for a customized item by making, proposing the changes to some original basic product model. Or they can even tell about a completely new product concept which may, a company may be directly taking up at a later on, at a later time. Now here, based on the concrete customer order, after the customer places his order, this is basically, first you get the order then, the idea is first you get the order then you make the product. So based on the concrete
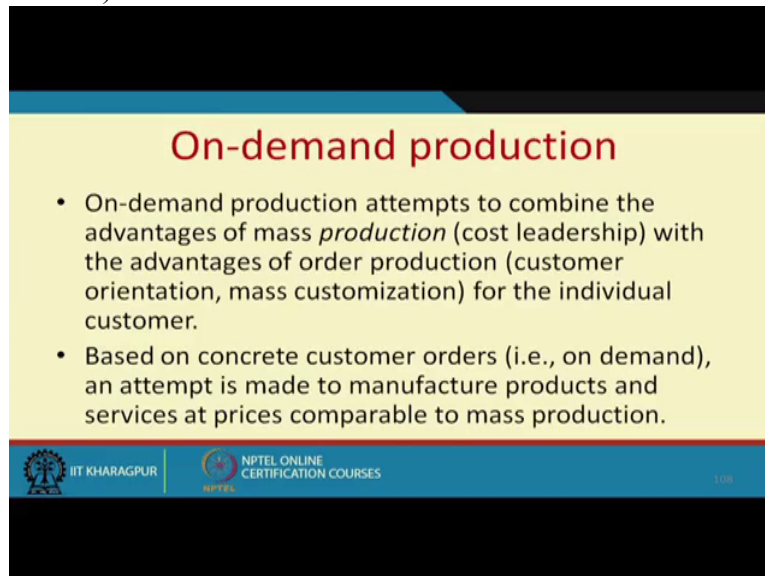
customer order, an attempt is made to manufacture the product manufacture the product and the services at a price comparable to mass production.

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So you can think of certain computer manufacturer like Dell who after getting the order and getting the customized order, if you have purchased a laptop, you can actually have additional features, you can delete some features and you can check how, check that, you can come up with a configuration which matches with your budget and convenient for you. So in such situations, after we place the order, then manufacturer like Dell, Dell in fact never manufactures its own product. It will be actually giving it to some of its subsidiary and they will be again sending to various component manufacturers. Then all these component manufacturers will be actually manufacturing it, then they will be giving you, then they will be giving to that, company who assembles the product, they will be giving, the components will be physically coming to intermediate company who will be assembling the product and finally it will be sent to Dell, and Dell will be delivering it; either the Dell or the subsidiary himself can deliver it to the end customer. So

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here the idea is

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first you get the order. So it is based on pull principle. It is not that first you make the production and you push it to the market. You first get the order from the market. You pull the order from the market and then you pass on that, I mean the whole product, this whole computer now based on your configuration, it will be understood that what are the components required. Then those components, then the company who is actually the responsible for assembly, he will be ordering to those component manufacturers. Components now come to the place where they are supposed to be assembled. Then they are assembled and sent. So even the companies such kind of on-demand production has become so streamlined that whenever you place the order to Dell or some other company that way they

will be actually estimating the time that is required based on their capability and they will be telling you even before the product is actually made, they will be telling you when exactly you are going to get the delivery of that customized product.

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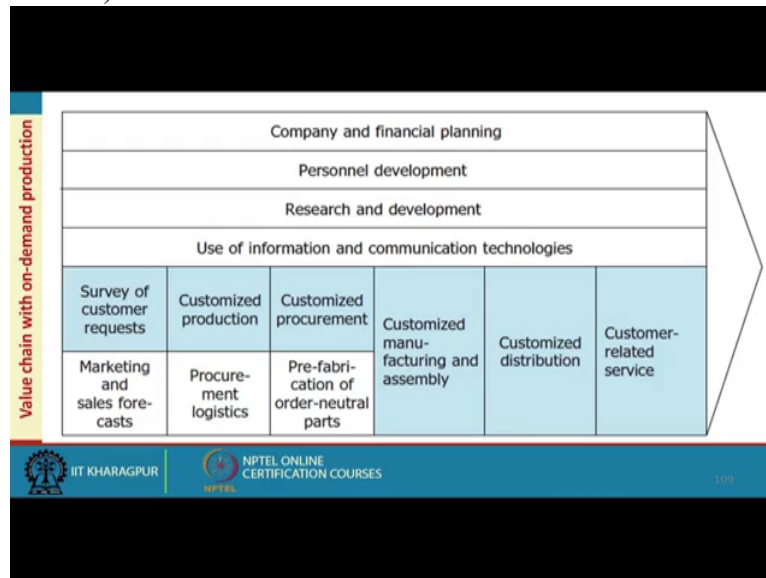
So the value chain in case of customized production is little bit different from that of the value chain that we have already discussed. So here this additional this blue things, there are these blue boxes here, there are certain additional activities during your inbound logistics, production and outbound logistics and there is substantial change during the marketing and other efforts that are, that come after your outbound logistics in the supply chain. So you can actually provide many kind of customer-related services through which you will getting the, you will generating the customer demand. You can use many kind of customized distribution that we have just now talked about. Then you can have customized manufacturing and assembly units, then you can have your customized procurement, you can have your customized production and you can actually make a survey of your customers' request and if possible you can

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merge a number of similar requests together while making a production. So truly because of these the companies have now become almost zero, have now come almost to the zero inventory level.

Now what are the advantages of this on-demand production and distribution?

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It is advantageous for both the company as well as the customer. Now by comparing different product configurations the customer can now calculate different price models, and select the optimal product configuration in terms of manufacturing and delivery. Because the companies will also be showing you how much time they are going to take for delivery that
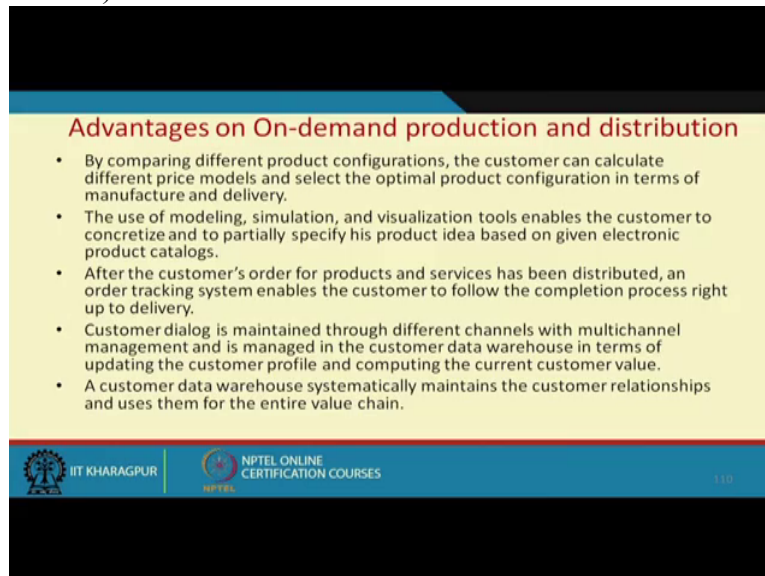
also can be calculated online based on the inventory position and the other, availability of other staffs at the producer's end. Then the,

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your customers can use very, I mean the, in fact the websites can provide various facilities for the customers which can be used and those facilities can have some kind of modeling and simulation and visualization tools so that the customers can use those tools to design his product and visualize it before, visualize it, visualize his idea before he actually makes the order. Then after the order of the product and services, when the distribution happens then the companies also provide the customer with order tracking system so that the customer can always follow the complete process of, process starting from the manufacturing till delivery. They know that at which stage is their product in. The companies have the benefit of connecting with the customer to maintain the dialog with the customer and they can send their product through different channels as we have discussed, through different kind of distribution network they can follow and finally can reach the customer. In the process, in the process they will be collecting huge amount of customer data as I told you directly by asking the customer or indirectly observing his behavior because customer will be coming to their website and doing various activities. They can actually make very large data warehouses. And a later time, these data warehouses

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can be used to systematically maintain the customer relationship and bring value to the entire supply chain. With this we finish the supply chain part. From next class onwards

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we will be talking about, we will be starting a completely new topic where we will be discussing about the technology options, the technologies behind these E- Business companies. Thank you very much.