E-Business
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Lecture 13
E-Procurement: New Paradigms in the Procurement Process

Welcome back. In today's lecture we are going to cover the technical part of the procurement process. First task is your spend analysis, second is what are various this sourcing options and how the companies are utilizing this sourcing options? Then the third thing we are going to look at is the contract management process.

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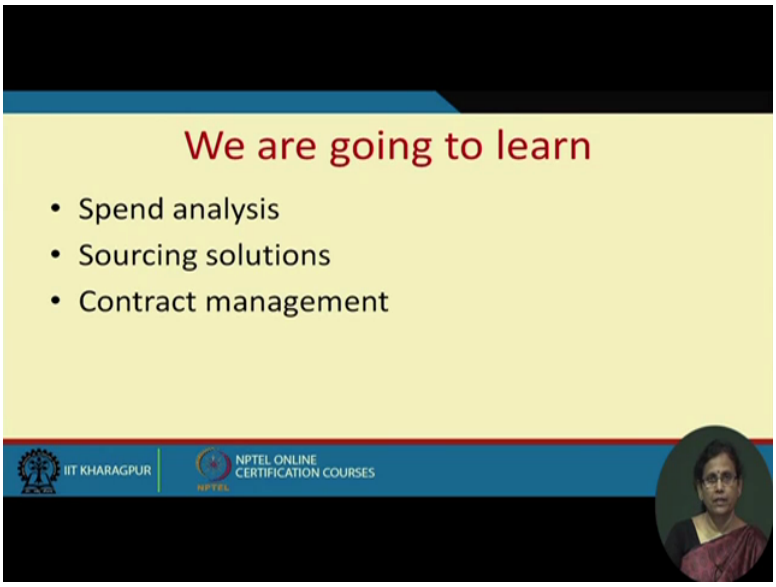

The first task is your spend analysis. Now what is spend analysis? It is the process of collecting, cleansing, classify and analyzing the expenditure data with the purpose of reducing the procurement cost, improving efficiency and monitoring the compliance. Spend analysis can provide the answers to the questions such as what was bought? When was it bought? With whom did we buy it? And how much did we pay for it? And so on.

So this is basically about consolidating your purchase data and answering various queries before you take decisions in your next purchasing cycle.

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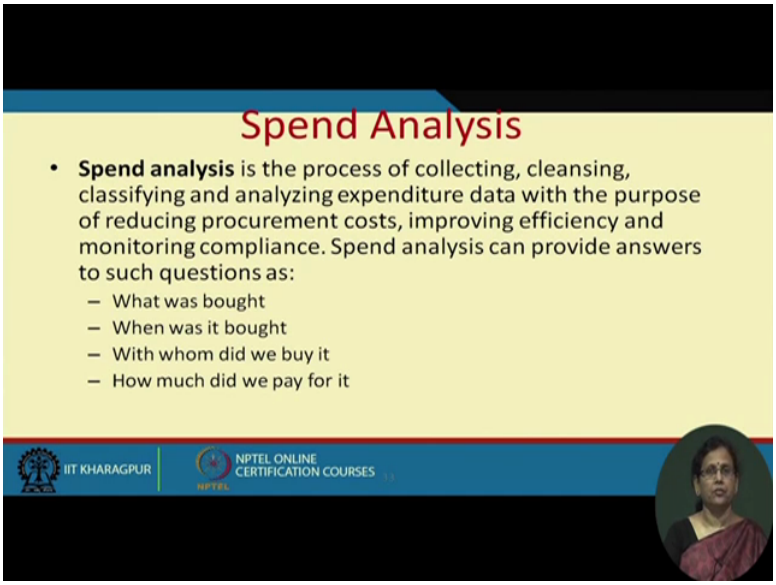

So there are many steps involved in this and there are many technical components involved which are otherwise was not present in your earlier procurement process. So besides aiding in purchasing it can also help the other areas of business. In fact spend analysis is actually a part of a much broader domain known as spend management in the organization.

So this spend management actually incorporates many stages and one of the stage is actually spend analysis. This spend management also includes spend analysis, commodity management and strategic sourcing.

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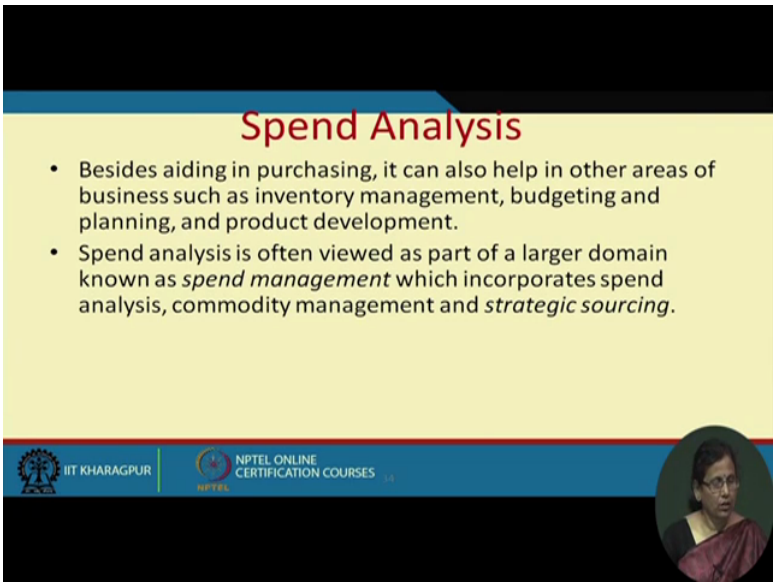

So let us try to see what are the steps involved in this spend analysis? First of all it is a strategic activity that helps developing an aggregate view of procurement spent across the organization using the transaction data. Now what is this transaction data? Where from it comes? During each of your past expenditure that you have made during procurement of various products and services in your organization that every transaction data gets stored in your database system.

And your transaction processing system helps as we have discussed getting many details like extensive details about this transaction. And we know that based on this particular data we can have many decision support activities. We can also have many decisions (ac) support activities which uses this transaction data. However there are little problem in using this organization wide transaction data.

So if your organization has one ERP system, last class we discussed the benefit of ERP system and how the ERP systems work? Actually in ERP system the (imp) most important way of connecting the subsystems and the business processes is a centralized database. So this centralized database actually helps in consolidating the data from various subsystems of a company.

In fact your ERP system can also collect the company's data from multiple locations. However ERP system may not be the only system in your organization or in that case many organization may not have this ERP system connected with their there are many you know a company may not be located in one place.

In fact it can have multiple sites and data from different sites may not be directly connected to your ERP system. If it does than at least one problem is solved but if it is not then the procurement across the organization first needs to be consolidated to create one database on which the spend analysis task has to be carried out. Even if the database is consolidated still then you have few problems. Like for example if you have bought your computers from some company.

Various divisions have bought computers let us say in last one year and one of the division the vendors name is actually IBM. In one of the places it is entered as I dot B dot M. In one place it is entered as IBM Corporation and so on. Now when you try to consolidate data to find out who are the suppliers? Who are the vendors who in the last one year from whom you have made purchases?

Then IBM, I dot B dot M and IBM Corporation will appear as three different suppliers. The people who are little acquainted with programming and all they can actually realize the difference that I am trying to tell. It is actually when you are matching the strings they are three different strings. So computer consolidating them as one supplier may not be possible in a very straight forward manner.

Similarly about you have to have consolidation or aggregating the spend data you have to aggregate the spend data across the commodities, across the suppliers, across the plants and this aggregation can provide you the basis for identifying the cost saving strategies.

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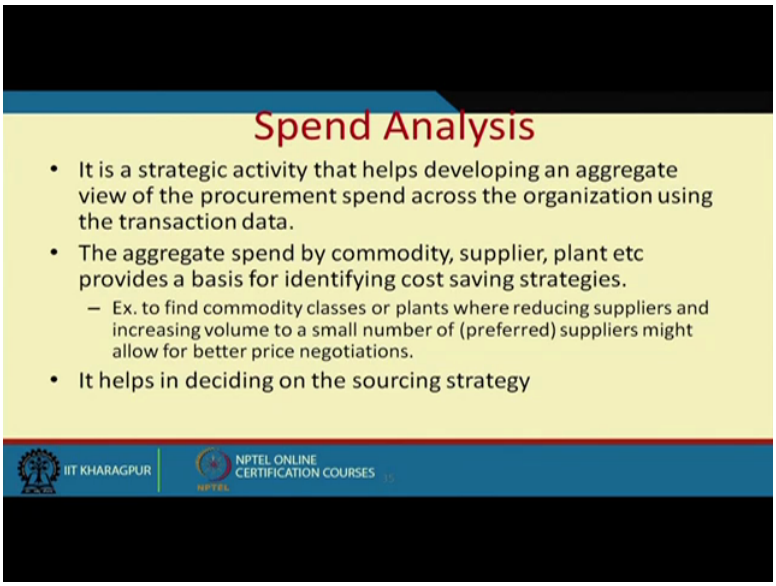

So now with this you can actually decrease your supplier base because larger your supplier base more is your corporate expenditure for maintaining or the supplier base and having this vendor relationship. It is a costlier operation. So you can actually not only reduce your price you can also reduce your supplier base through right kind of spend analysis. So these are actually technical functional requirements for spend analysis. So what are they?

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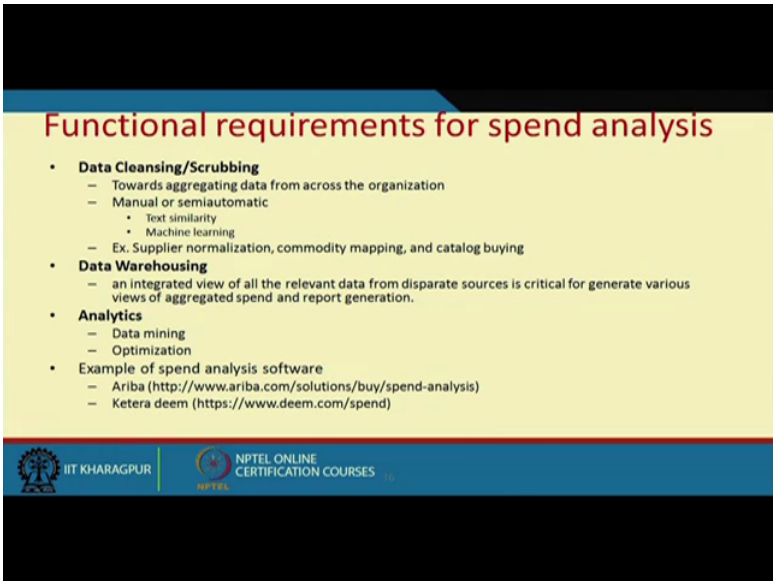

As I was telling you first task is your data cleansing or data scrubbing. In fact before any kind of data analytics stats task is carried out, cleaning the data or pre-processing the data is actually the first stage. So during this pre-processing and cleaning stage you aggregate the data from the organization and this process can be either manual or semi automatic. By semi automatic we mean we can integrate various techniques like text similarity, machine learning technique, etc along with little manual effort to group this data.

As I was telling you few minutes back the problem here is the supplier normalization, commodity mapping and catalogue buying because the people might be actually entering the data in varieties of ways. So even if it is the same supplier, even if it is the same commodity because of the difference in the data entry, the way the people enter the data they appear to be different to a program which automatically (ties) tries to normalize them.

So therefore you need some manual effort as well for this. And like any other data mining activity a large amount of effort actually goes for data cleaning and scrubbing. The second stage is because the data is coming from various sources, from various functional areas, various geographical locations, now you have to combine them together to make something called a data warehouse. This data warehouse can actually provide you and integrated view of all the relevant data from different sources.

And as I have told you this data warehouses are actually the basis for making this online analytical process queries, OLAP queries. So you can get the multi viewed data generated using this data warehouses. So besides getting this multi viewed data and I was telling you

during various OLAP varies like your (slic) aggregating, slicing, dicing, etc you also have many kind of analytical tools for spend analysis.

These analytical tools broadly can be either they can be data mining tools or they can be optimization tools. So there are many vendors who provide spend analysis software separately or as a part of their e-procurement solution. For example your Ariba, in fact Ariba was e-procurement service provider. Now Ariba is actually acquired by SAP. So Ariba now is a part of SAP. So if people who are using SAP ERP solution they can be easily (in) integrated with Ariba platform.

So Ariba, Ketera so these are some of the vendors who provide solution to such spend analysis activity in one organization. Then the next task is about selecting the right sourcing strategy. So for selecting the right sourcing strategy you have to be evaluating different sourcing options for each commodity class or other dimension and identify the potential cost saving.

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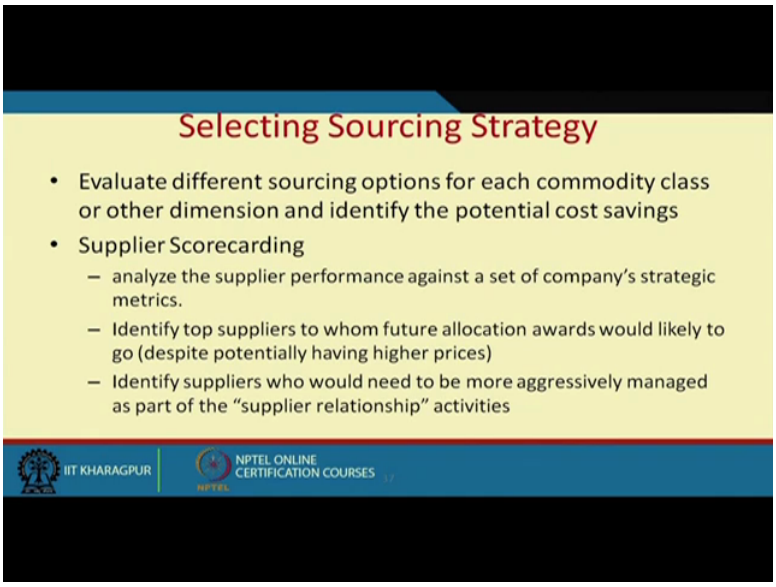

For example b if you have bought certain items in the past and your different divisions have brought the same items with different prices even after the competitive bidding then at least you can identify who are the suppliers, I mean if you consider them differently for each of the purchase situation at least you know who are the suppliers who are providing the item in a cost effective manner.

Maybe after the purchase you can also identify who are the suppliers who are maintaining the right schedule. In case you are purchasing some kind of bulk items which is to be delivered in some appropriate schedule. So accordingly in order to pre qualify a supplier from your existing supplier base usually you do something called a supplier scorecard.

Now what is this supplier scorecard? It analyzes the supplier's performance against a set of company's strategic metrics and it identifies the top suppliers to whom the future allocation award would go despite their potential high prices because they are otherwise good. Their quality is good, they maintain to the delivery schedule and so on.

So it is about identifying the supplier who would need to be more aggressively managed as a part of the supplier relationship activity of the company. Now let us know little bit more about the supplier's scorecard.

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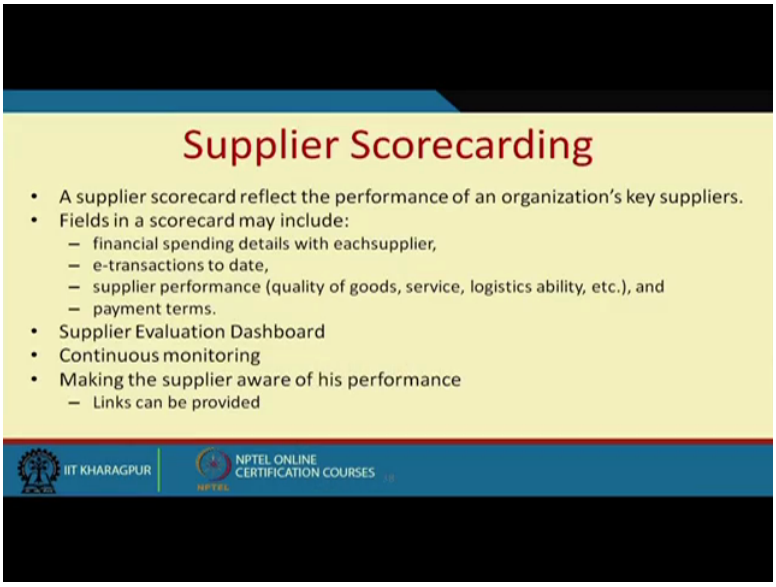

A supplier scorecard actually (re) reflex the performance of an organization key suppliers. A supplier scorecard many times they will be provided through your corporate information portal to the suppliers after they login to your portal. So as I told you there is a difference between corporate website and corporate information portal.

In a corporate information portal not only your internal users but some of your external important stakeholders also have access. So a supplier can usually login and they can actually view their supply scorecard. Now supplier evaluation has always been an important part of

every procurement process. And in fact when we talked about the traditional procurement process it was also a part.

But right now because of the ICT since all the individual departments are connected through either ERP or some kind of software what happens, the supplier's performance across the organization, if the supplier is supplying certain goods or a supplier can provide different kinds of goods as well. So it is the aggregate performance of that supplier across all the organizational units.

So from various organizational units the data actually comes in to the ERP system and finally a combined score is determined. So a more rigorous way of evaluating the supplier has actually happened because of information and communication technology, okay. So the typical fields in a scorecard may include the financial and spending details with each supplier, e-transactions to the date, supplier performance that is quality of goods, service, logistics ability, etc and the payment terms.

And the supplier's scorecards will actually be shown to the purchase department, to the individual department because everybody can access this through the corporate information portal. They can before pre-qualifying a supplier your individual departments as well as purchase department would be able to see this supplier's scorecard through their dashboard. And this supplier evaluation dashboard will also be visible to individual suppliers.

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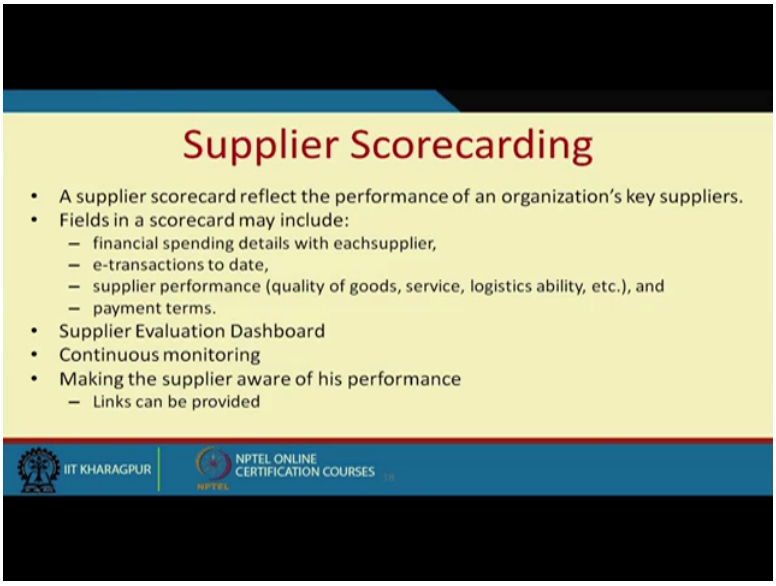

And this not only helps in pre-qualifying the supplier this also helps in continuously monitoring your supplier and it is a part of your vendor management program. And it also helps the supplier to be aware of his own performance and his performance will improve because he knows that he is continuously monitored. The typical criteria involved in a scorecard is actually quality, service and delivery.

And as shown in this dashboard the data comes from various departments who have already purchased from this supplier and they enter the values which appear in the scorecard.

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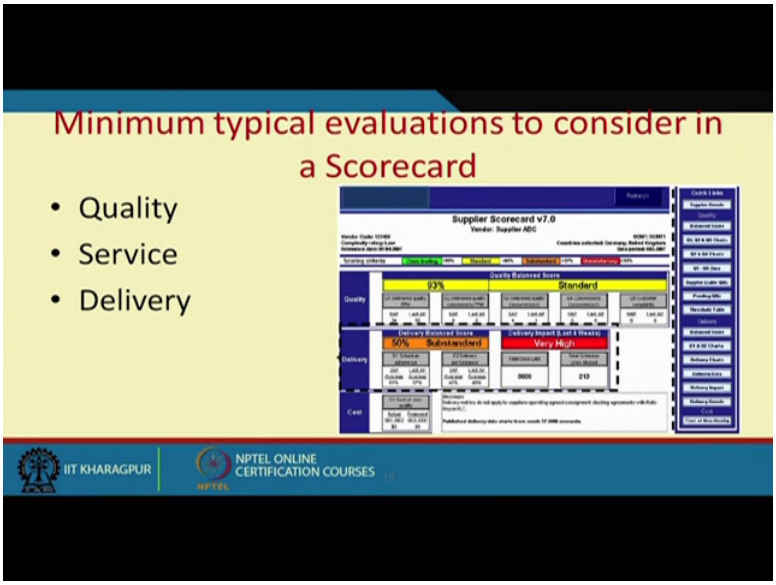

Then come to the sourcing solution. As I was telling you there are two kinds of sourcing solution. Either it is catalogue buying or it is contract pricing. So the first one that we are going to discuss is catalogue buying.

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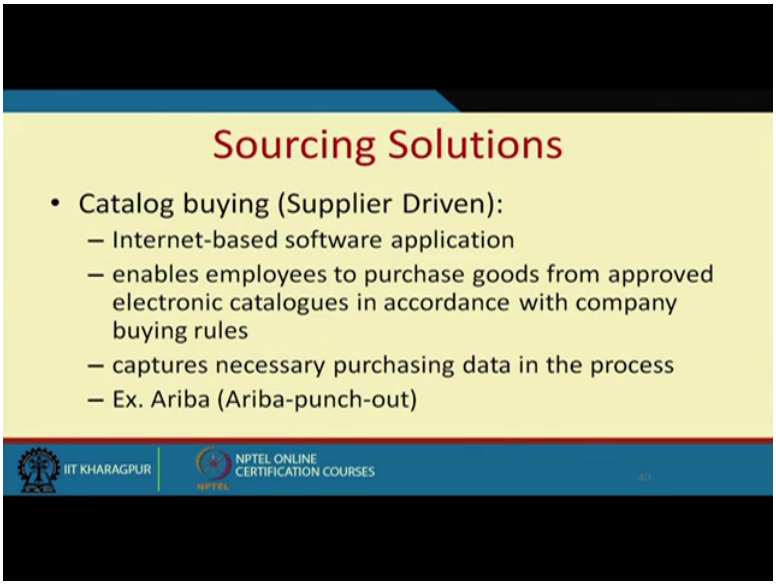

This catalogue buying there are two options, one is catalogue buying another one is contract pricing. In catalogue buying it is a supplier driven activity whereas the contract pricing is a buyer driven activity. By buyer driven we mean the buyer has to initiate as well as provide the platform for carrying out this sourcing activity. And in case of catalogue buying the supplier has to provide the software platform for this.

So this we were also (cal) calling as internet based software solution for e-procurement in our earlier lecture. So this catalogue buying is actually one internet based software application which enables the employees across the organisation to purchase goods from an approved electronic catalogues in accordance with a company buying rules.

So in fact some of the purchase department managers might be empowered and might be giving a purchasing card to buy the items from this approved set of catalogue. Now this catalogue in the process captures the necessary purchasing data and because it is a (pro) supplier provided solution the data that it gets captured goes to the supplier system.

So therefore to get (da) this data automatically to the buyer's information system this particular catalogue needs to be integrated at the buyer side. By integration we mean the enterprise information system or ERP system of the buyers company need to be integrated with this catalogue buying software solution. Then second one is your contract pricing.

As I told you this contract pricing is a buyer driven activity. Either the buyer develops its own software for this contract pricing or it takes help of certain third party service provider.

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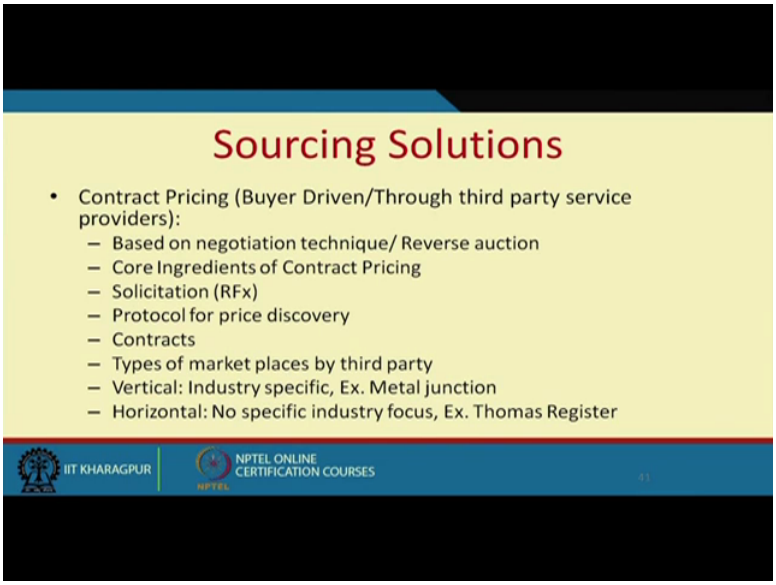

In fact while talking about various e-procurement options we have seen this B2B auctions. This B2B auctions are actually basically what we call as contract pricing. This B2B auctions can be carried out either by the company by developing its own software or it can be provided by third party. Now again in the third party there are two categories, one is either it has to be a industry consortia where it is a third party service provider which caters the need of a specific industry segment.

Or it can be a internet based market place which is a generic place for collecting buyers and sellers from across various industry segments. Then what are the activities under this contract pricing? First one it is based on the negotiation technique which is called otherwise the reverse auction.

Then the core ingredients of contract pricing are the inputs to the system which comes in forms of business rules, etc for designing this reverse auction. Then the next important thing under contract pricing is solicitation. By (solitication) (soliticatio) (soliti) solicitation we mean getting this RFx documents from the supplier where this RFx can be request for proposal, it can be request for quotation and so on.

Then it has to have a protocol for price (disov) discovery. Either it matches with your traditional tendering system where everybody gets one opportunity to submit their bid and bid gets opened. Now because though this tendering was the earlier (sys) system which is there in any traditional procurement system but with the intervention of information and communication technology now it is possible to have, what was the earlier system?

Earlier system was first you have the tender documents, then you select the three L1, L2 and L3 and finally you sit across the table to negotiate the price. Now because of this (IC) internet this reverse auctions are possible and using this reverse auctions one buyer can connect with multiple sellers and can make the sellers compete among themselves to reduce the price further.

So this is the kind of online negotiation. Then so this protocol for price discovery can be of two types, one is single round, it can be multiple round which is called multiple round. One is called reverse auction then you have this contract.

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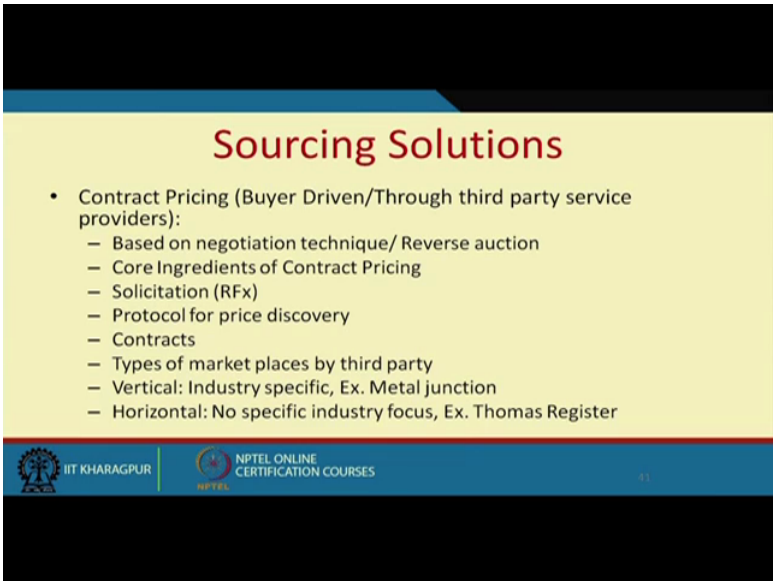

Once the source is decided, your supplier is decided based on your technique whether it is single round or multi round because of this (competit) (competiti) competitive price decrease you decide your supplier then contract is made.

Then here as I was telling you for carrying out this you can have either a third party service provider or you can have (indus) not industry specific focus group service provider. So when it is industry specific we say it is a vertical connection and when it is not industry specific it has certain horizontal focus.

Then the (solitic) (solitica) (soli) solicitation is the process of seeking the information proposal and quotations from the suppliers. While this (soli) solicitation can be verbal, quality and consistency is enhanced if the process is formalized as a written or electronic document.

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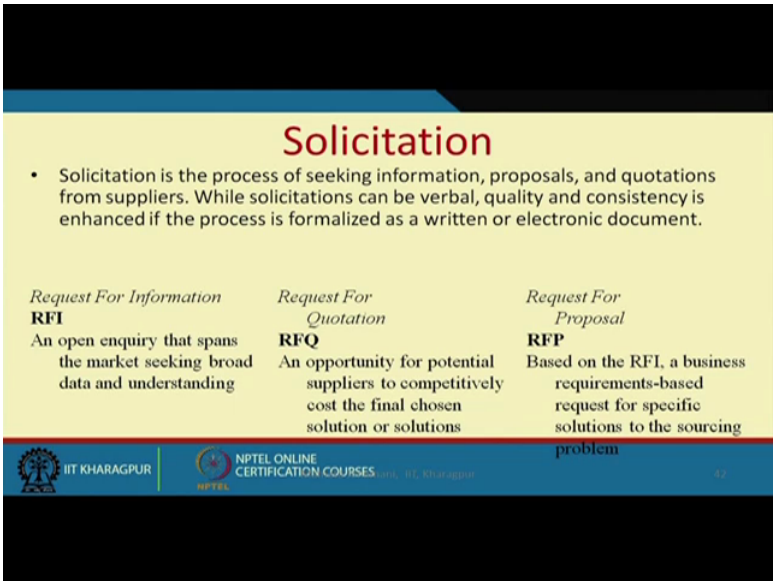

In fact there are three types of such documents. First one is request for information and it is an open enquiry that spans the market seeking the broad data and understanding about the product. Second category of document is actually request for quotation. Here you have given opportunity for a potential supplier (compet) to compete with each other and finally you make your decision based on the cost.

Then you have your request for proposal. This is based on request for information, (requ) you can decide your business requirement and based on your specific requirement you can decide your sourcing plan. So as I told you this RFx for contract negotiation can be either request for information, can be for (prop) quotation or it can be for proposals.

It is collectively referred to as RFx document. So each type of document represents a mean for a buyer to specify the requirement of a purchase among multiple dimensions from multiple suppliers. In fact to carry out this contract (nego) negotiation either the organisation or the third party (ser) service provider has to have one RFx application support.

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So if you look at this diagram this is a schematic diagram of your RFx process. Here the buyer who has to plot this RFx document and in turn has to receive bids first submits its requirement and its bid types and its business rules and then those things are actually integrated and shown to the buyer who in turn submits this RFx document or corresponding bid. In the third stage these requirements and these bids are combined together and RFx is getting evaluated.

And after this evaluation is over, this allocation is made and both the buyer and supplier are informed about who is the winner of this process and he gets the order, the lowest bid supplier gets the order.

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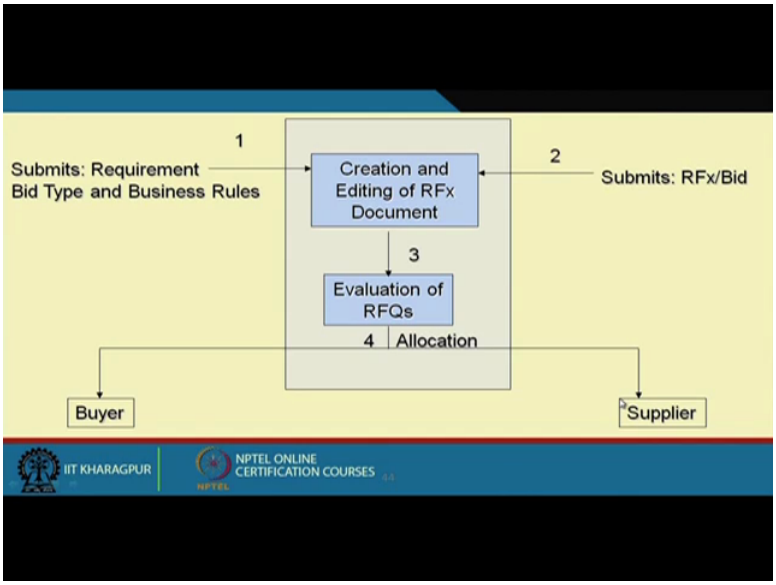

Though this particular process appears to be very simplistic, it is not so because here actually we carry out certain structured decision making activities of comparing the bids of the various vendors and this bid can be both technical bid as well as price bid. Comparing technical bid is a little difficult but comparing price bid is easy for the single items and if you are not purchasing them in groups or you are not considering the other criteria for supplier evaluation.

Now let us look at formally what are the characteristics of an RFx system? It is a sourcing platform that should make the RFx process as easy and as straight forward as possible for all the parties involved. Now who are the parties involved? The parties are both buyer as well as supplier and there might be some auctioneer as well if you are involving a third party. Now it should be versatile enough to be used for both goods and services.

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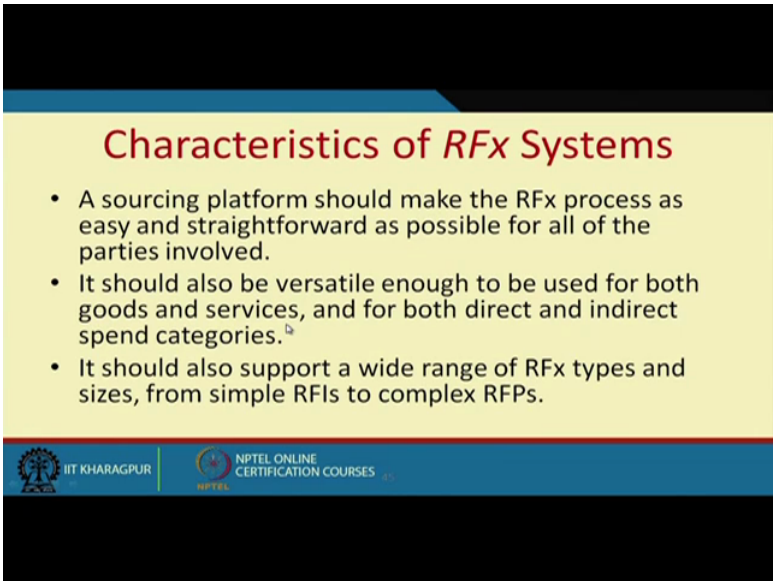

Suppose today you are trying to buy through this some medicines and tomorrow you would like to buy a service for painting your building. So for both the cases you do not have to write the software all the time. Your software will be such that readily the bids can be customized to whatever may the product and service maybe. Now it should also support wide range of RFx types starting from simple RFI to complex RFPs.

So this formats and (set) settings for reverse auction bids can be very simple or very complex depending on the situation. For example some of the basic settings are buying multiple quantities of a single line item, multiple line items and while buying this items you can decide what should be your start price and what should be your start price and maximum up to which you can go? See, before you conduct any kind of auction you have some knowledge about the market.

You should not be buying an item at too lower price or too higher price. So you can actually decide some base price and some upper limit. So that is what your start and reserve price is. Then it may have the provision for buying partial quantity bids. By partial quantity bids we mean suppose we would like to buy let us say 100 units of something.

If someone is actually (allo) offering 50 units at a lower price we should be able to buy it. Then it may have provision for bundled bids. By bundled bids we mean combining multiple items together.

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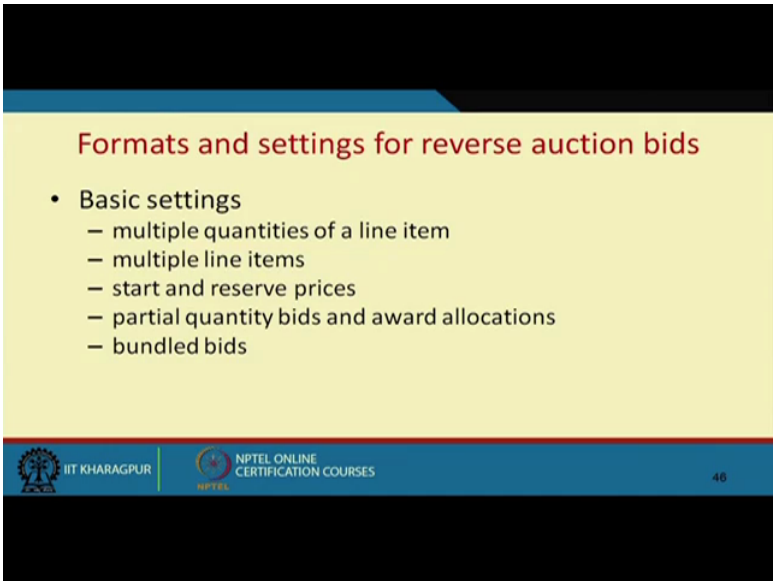

Many times when we combine multiple items actually the price goes down. So it should have the (pra) provision for bundled bids as well. But there are some advanced settings as well. So the first category of such setting is combinatorial auction. A combinatorial auction actually allows the suppliers to mix bundled bids with that of unbundled bids. By meaning of bundled bids we mean multiple items together.

So in a typical combinatorial auction when we discuss about the auction we will be learning more about it. But a typical (comb) combinatorial auction one supplier can supply multiple bids. Let us say we are going to buy (fi) 5 items A, B, C, D, and E. One supplier can say I can supply A and B with (thi) this price, I can supply A, B and C with (thi) this price, I can supply B, C and E with this price and so on. Similarly many suppliers will provide many such bundled bids of those (ph) 5 items.

Now what is buyer's requirement? Buyer's requirement to buy exactly one item of each type. He has to buy one unit of A, one unit of B, one unit of C and one unit of D and E. So therefore from this multiple offers which are in bundles he has to choose the items in a manner so that he is (buy) buying exactly one unit of this and he is buying one offer from each supplier.

So this is a complex combinatorial problem and proper analytical model has to be made. Similarly the second category is your volume discount (optio) (auc) auctions. In case of volume discount auctions the idea is you take the advantage of the quantity. If you buy more quantity you pay less price. So again some optimization problem can be made out of this

situation and can be solved online through the bidding software. Then you can have multi-attribute reverse auction.

As we know usually in a traditional procurement process we have a two cover system where we have (multi) first one is for technical bid where the technical and financial performance of the supplier is evaluated. And similarly we can also include the (pla) past performance of the supplier and various other qualitative attributes provided by the suppliers.

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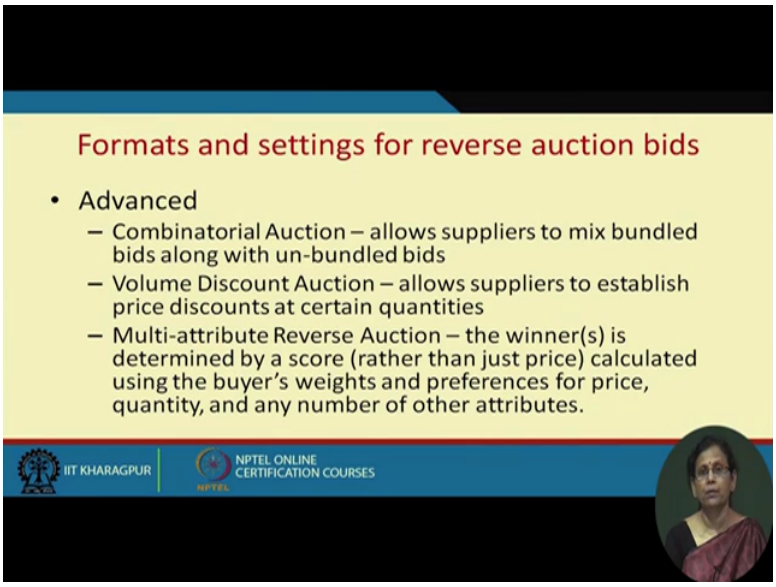

Typically though those evaluation of that technical bid is done by a group of people who are involved in the purchasing process manually, (traditional) traditionally it is done in that way. In case it happens automatically unless otherwise we have a very sophisticated software written for this. Again this particular part of evaluating technical bid becomes manual.

And the other part that is the price bidding has to be done automatically. But in case you have a multi-attribute reverse auction implemented you will have provision for combining this qualitative attributes and quantitative attributes other than the price and the suppliers past performance everything together to automatically evaluate a bid. So now let us talk about various types of protocols for price discovery. This is the next stage.

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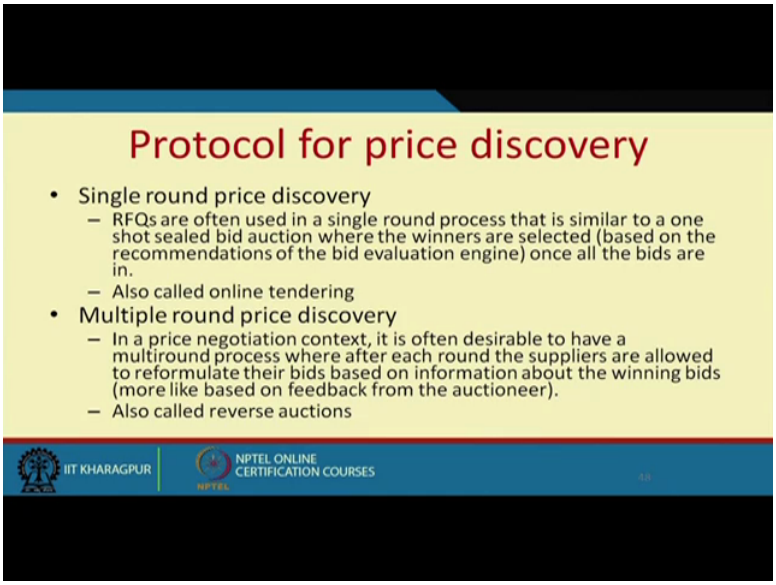

So far what we have done? We have talked about the spend analysis. Then after the spend analysis we prequalified the suppliers whom we should be buying from. Then from those group of suppliers now we are trying to discover the price from those group of suppliers by making them competing with each other. So this price discovery process can be either single round or it can be multiple round.

In case it is a single round price discovery it is equivalent to your traditional tendering system where all the pre-qualified bidders are actually asked to submit their bids in one round just like your traditional tendering process. And at a pre-specified time and in the presence of the committee members in an online environment those bids get opened.

So here the RFQs are often used in a single round process that is similar to one short sealed bid auction where the winners are selected based on the recommendations of the bid evaluation engine. Once all the bids are in then only the bids are opened. So this is also called online tendering. Then the second category is called the (mu) multi round price discovery.

As I was telling you in case of traditional process after the tendering is over at least the first three winners the L1, L2 and L3 vendors are called for negotiation over the table and the price is made further down after proper negotiation. But (interven) with this ICT coming in and specifically because of the internet now the buyers are able to compete with each other for decreasing the price in an online environment.

So in this environment the buyer provides a platform in which the first buyer submits the bid, then the second buyer (tie) (ties) tries to outbid him. So in this process the price actually gets

decreased. So in a price (ne) negotiation context it is often designed to have a multi round process where after each round the suppliers are allowed to reformulate their bids and they reformulate their bids based on the information they get from the system.

For example after each round the system will tell that this is the price, this is the current price. So in fact all of you if not in the (tra) reverse auction scenario at least we have seen many of us are exposed to this bidding process in online auctions which happen in the portals like your eBay or Amazon, etc.

So actually this auction takes place in which the price actually goes up because you are trying to sell the product and many buyers are competing with each other and they try to pull the price up. But here in case of reverse auction just the reverse thing happen and they try to pull the price down. The suppliers compete with themselves and they try to pull the price down. So therefore in accordance with the selling auctions here just opposite things happen.

So therefore they are called reverse auctions. So in case of this single round discovery they are called the online tendering because they are simply replica of the traditional two cover tendering process and the other one where the buyers compete with each other to decrease the price as much as possible it is called the reverse auction.

So this is the schematic diagram of multi round price discovery where actually what happens, (buy) it happens in the multiple round, the buyers are asked to submit the bids. Then after the bids are arrived then allocation is decided, then what is the current price that is published. That made available to all the buyers. Buyers based on this price signal they try to reformulate this bid and they submit the bid. And they continue this process till you receive no more decrease in price.

So whosoever is the lowest bidder actually becomes the winner. So this process is also called winner determination process. This multi round price discovery process is also called the winner determination process.

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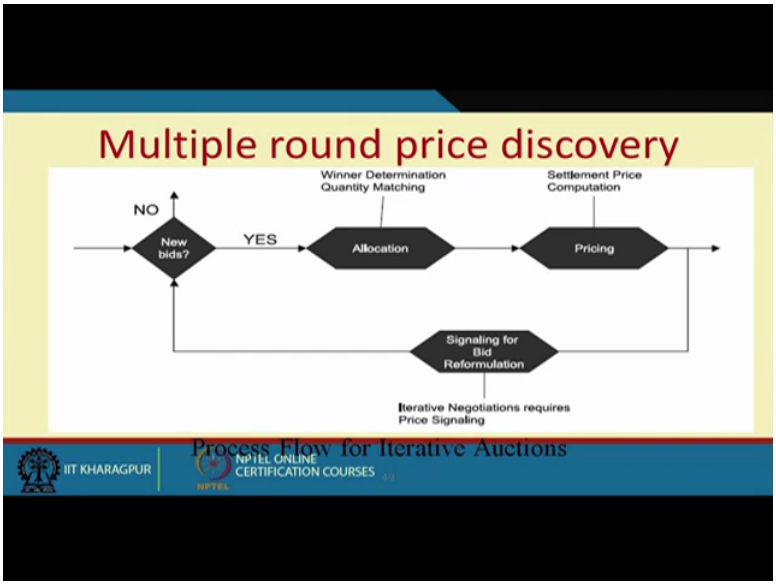

Then the next phase is actually your contract management. In case of contract management it is a stage which comes after you decide the source and you decide your (sche) delivery schedule and so on. So to monitor the activities of your supplier as well as to monitor the (pur) purchasing process after the sourcing we have this contract management part of the software.

These contracts are actually legal documents containing price of the items to be procured and their terms and conditions. Once executed these contracts are meant to be used to procure the contracted line items, perhaps via a procurement system. So the point that we are going to make is this contract management it is not that contract management is just happening right now.

It was happening when ICT intervention was not there but what we are going to look at is how ICT has and what ICT is able to do in the context of contract management. So once executed, these contracts are meant to be used to procure the contracted line items using negotiated prices and terms. A sourcing platform must also provide a mean to generate the contracts based on the preceding RFx and auction negotiation depending on whether it is single round or multi round discovery.

But the contract is to be generated by the sourcing platform. Then these documents contain all the terms and conditions regarding the further activities to take place throughout the procurement cycle.

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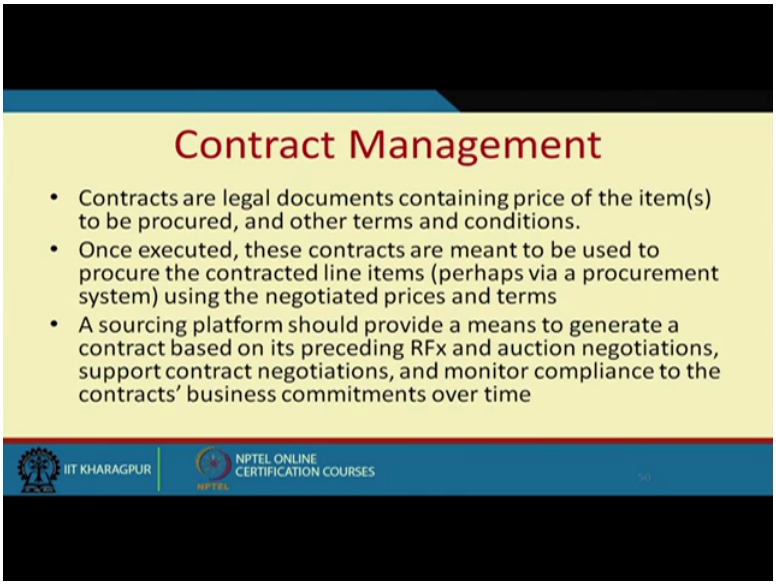

And the terms and conditions which are contained in the contract documents has to be honoured by both the business partners. Now let us look at what the state of the art contract management software do and do not do. First of all what they do? They can provide alert notification when the contract is soon to expire.

The buyers purchase volume commitment can be monitored with alert notification sent if there is a danger of buying under the minimum quantity within the designated time period. Now notifications can be sent alerting the buyer and the supplier of a suppliers violation of the delivery commitment.

And what they do not do? They actually this (con) contract commitments to be monitored must be actually manually selected out of the contracts (nego) negotiated legalese into a structure easier to analyze. Then the business process data and the raw transaction data needed to access whether the (commen) commitments are being fulfilled or violated is also captured manually.

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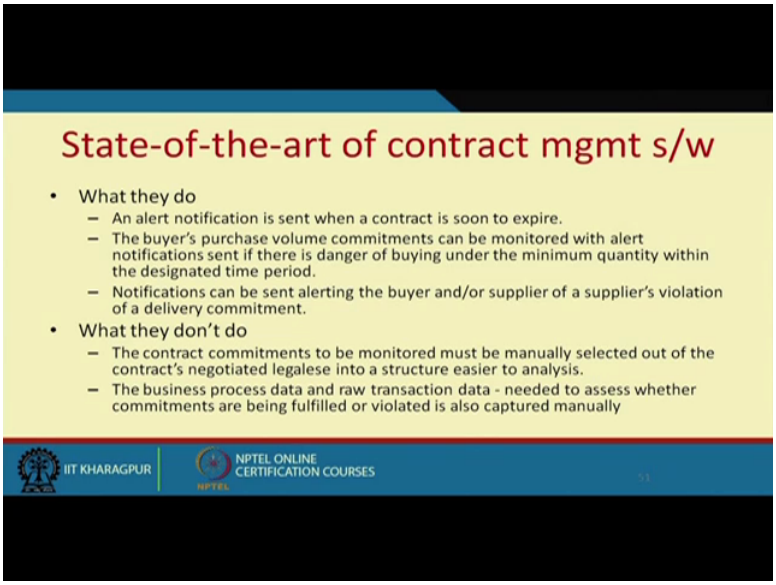

So with this we saw that how exactly what are the technological involvement in the procurement process and how it has changed the traditional procurement process? Thank you very much.