Quality Design and Control
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Lecture – 08
Management of Quality - I (Contd.)

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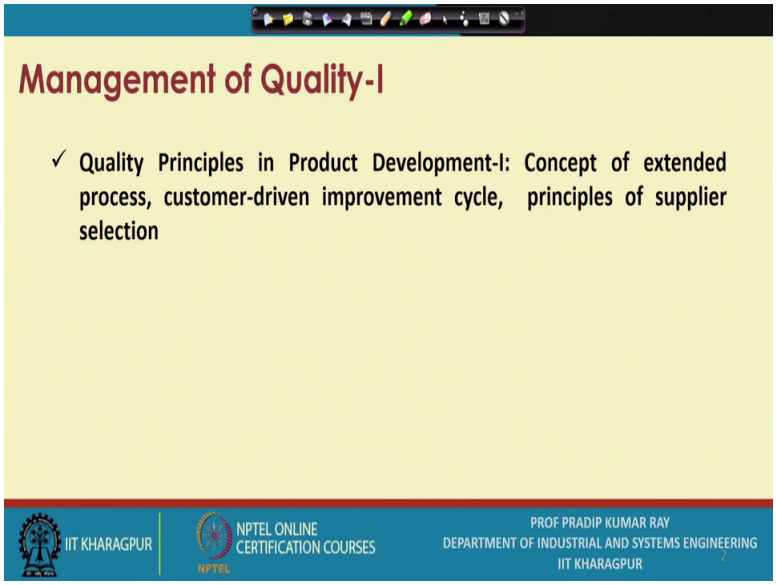

So, continuing our discussion on management of quality, we need to discuss certain quality principles in product development and you know there are several types of quality principles you should be aware of during the product development stage. Three important you know the principles I am going to discuss now the first one is the concept of extended process customer driven improvement cycle and the principles of supplier selection so these are three important principles.

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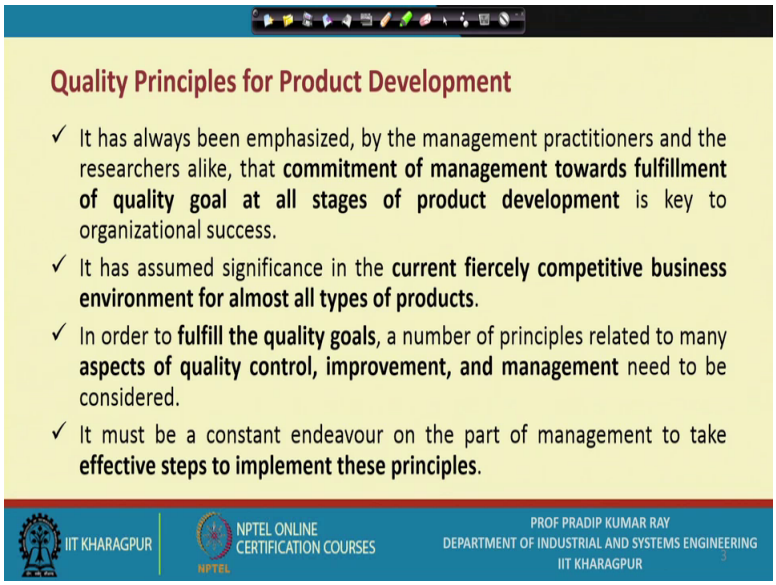

Now, it has always been emphasized by the management practitioners and the researches are like that the commitment of management towards fulfillment of quality goal at all stages of product development it is key to organizational success, this point at this issue we have been emphasizing all the time that means, the commitment of management is very vital. It has assumed significant in the current fiercely completive business environment for almost all types of products and in order to fulfill the quality goals you need you have no other alternative, but to apply certain number of principles related to many aspects of quality control, improvement and management.

Essentially you know we have three important aspects, first one is the quality control, second one is the quality improvement and then you definitely emphasize on quality management. It must be a constant endeavor on the part of any management to take effective steps to increment this principles it is obviously, so you should be aware of that and in which context this principles are relevant. Now these principles which you are going to discuss this principles are general in nature and as they are general in nature they are applicable in all types of organizations in almost all situations or conditions.

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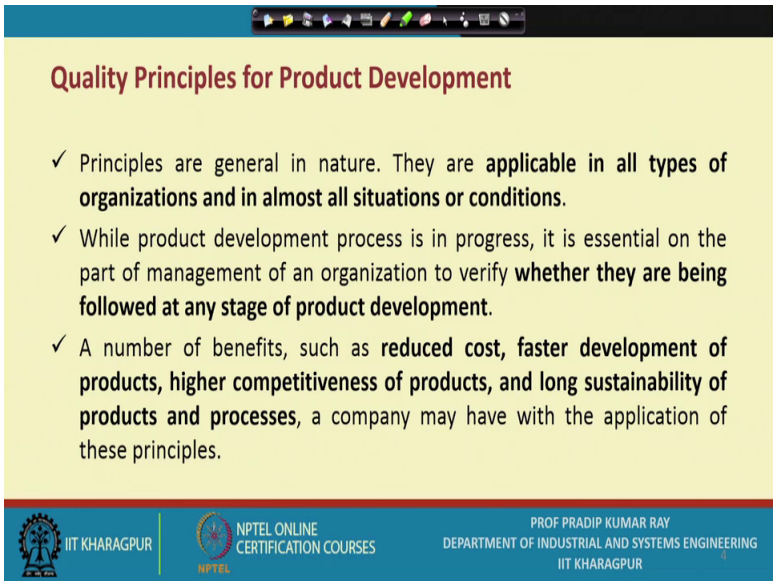

Now, related to product development process, it is essential that on the part of management of an organization to verify whether they are being followed at any stage of product development this was very vital otherwise, as we are aware that if the product development process is not effective or efficient the company has to pay a heavy price for this one, so we cannot afford to ignore all these relevant and important principles during product development stage. A number of benefits such as reduces cost, faster development of products, higher competitiveness of products and long sustainability of the production processes. So, a company may have with the application of this principles so these are the benefits and you know without having this benefits the company sustainability will be at stake.

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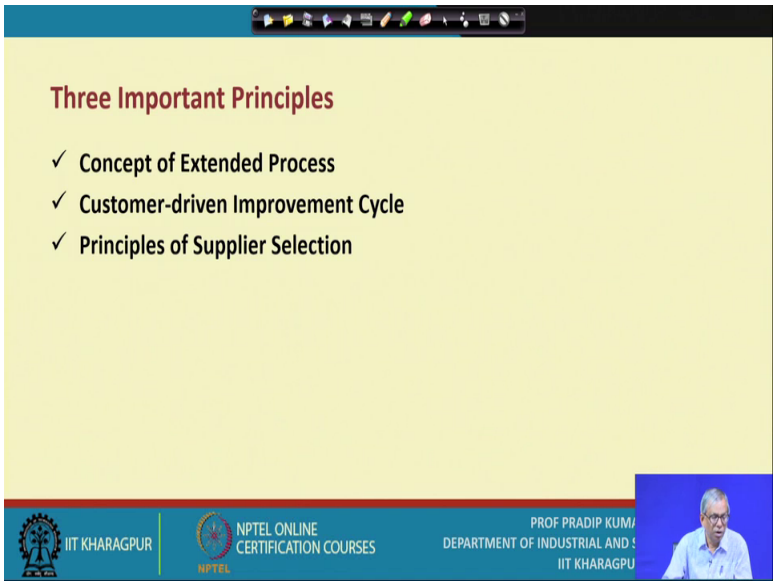

Now, so briefing all these aspects that why this quality principles are required to be used or to be followed in product development process three important principles I am going to discuss, first one is the concept of extended process the second one is the customer driven improvement cycle what is that what are the elements in this improvement cycle and the principles of supplier selection.

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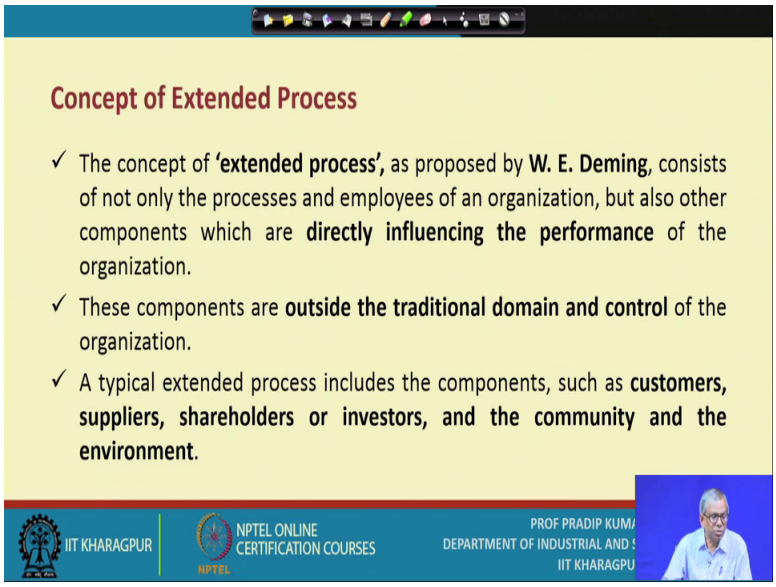

So, let us talk about the extended process what is this extended process, now these concept was initially proposed by W. E. Deming he is considered to be one of the quality

gurus and these extended process consists of not only the processes and employees of an organization, but also other components which are directly influencing the performance of the organization. So, these components are outside the traditional domain and control of the organization, that is the meaning is very clear when you look at an organization we talk about it is employees we talk about it is processes, but you need to consider along with these two components you need to consider some other you know the components also which essential which are lying outside the domain and control of the organization.

A typical extended process includes the components four components we have 5 including you know the community essentially there are four components like customers, the suppliers, shareholders and investors and the community and the environment. So, these are this should be this all these five components must be part of the extend process.

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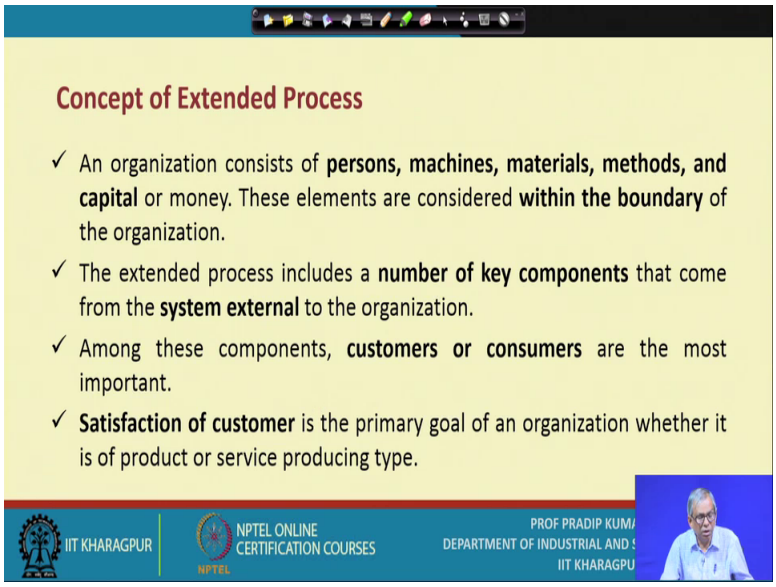

Now, let us just highlight certain points in this context. An organization consist of persons machines or facilities materials methods and capital or the money these elements are considered with in the boundary of an organization this is very clear everybody knows about it, but the extended process includes a number of key components that come from the system external to the organization.

So, this we must look into that means, what are those you know the components they are existing outside of the organizational domain, but they are significantly impacting or influencing the performance of an organization.

So, among these components customers or the consumers are the most important it is obvious satisfaction of customer is the primary goal of any and any organization whether it is a product or service producing type.

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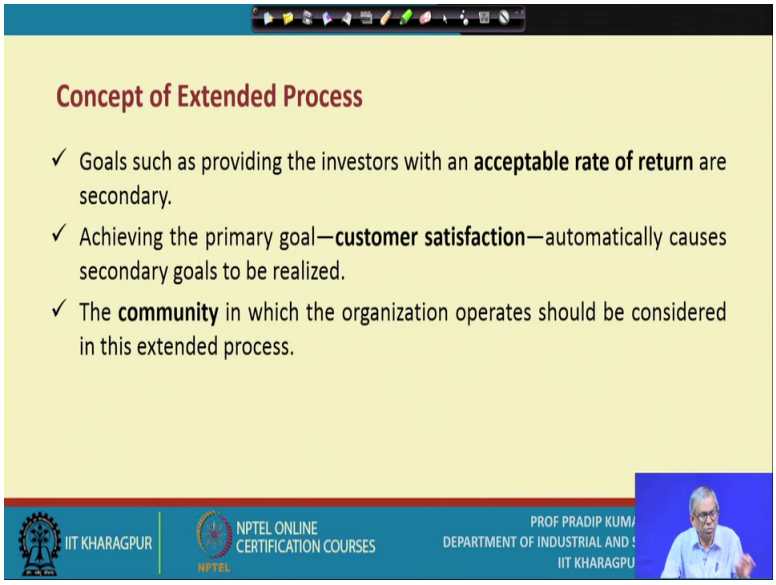

So, customer you know we have to consider the interest of the customers, goals such as providing the investors with an acceptable rate of return are secondary, so obviously the investors will be there and we need to assure that that acceptable rate of return they are you know they are eligible to obtain achieving the primary goal that is the customer satisfaction automatically causes secondary goals to be realized that means if the customer is satisfied more number of units you can sell your revenue will increase your financial performance will be better and obviously the investors will be getting a high or acceptable rate of return on the investment which they have made.

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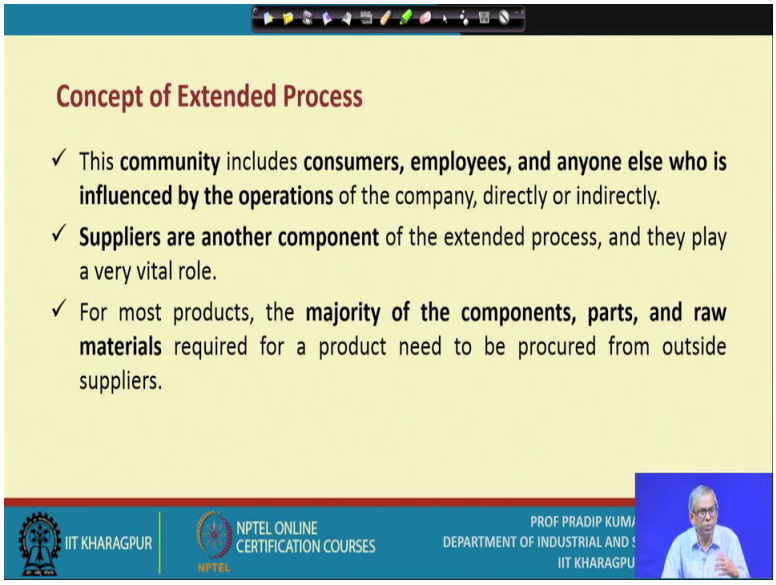

The community in which the organization operates should be considered in this extend process, that means the people at large who are directly or indirectly you know getting influenced by the companies activities or organizational performance. These community includes consumers, employees and anyone else who is influenced by the oppositions of the company directly or indirectly this point already made, suppliers are another component of the extent process and they play a very vital role, for most products the majority of the component parts and raw materials required for a product need to be procured from outside of the suppliers, through you know when you start collecting data on these aspects you will find that almost you know the 40 to 70 percent of the items listed in any bill of material for a product are actually you have to procure from outside That means from the suppliers.

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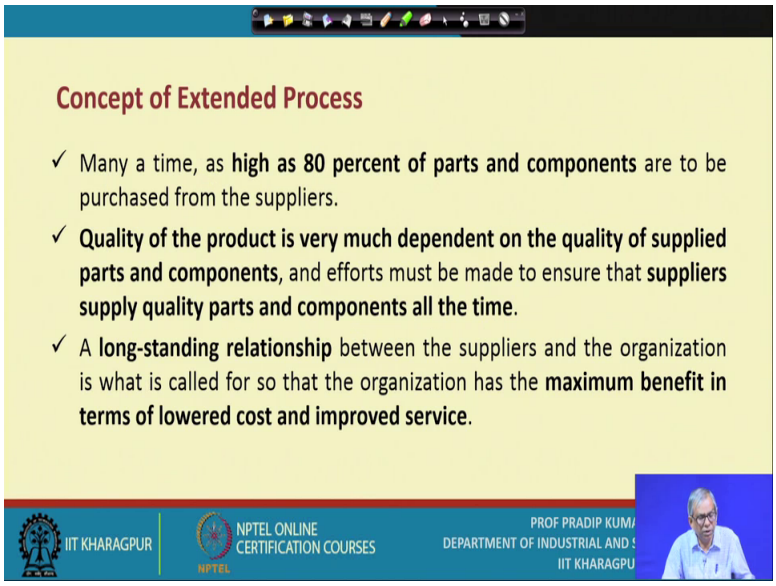

Many a time as I as 80 percent of the parts are components are to be purchased from the suppliers so this point is to be noted and quality of the product is very much dependent on the quality of the supplier parts and the components, hence and efforts must be made to ensure that the suppliers supply quality parts and components all the time is it ok. So, this is obvious and you know where the suppliers quality will directly influence the product quality. A long standing relationship between the suppliers and the organization is what is called for so that the organization has the maximum benefit in terms of lowered cost and improved service.

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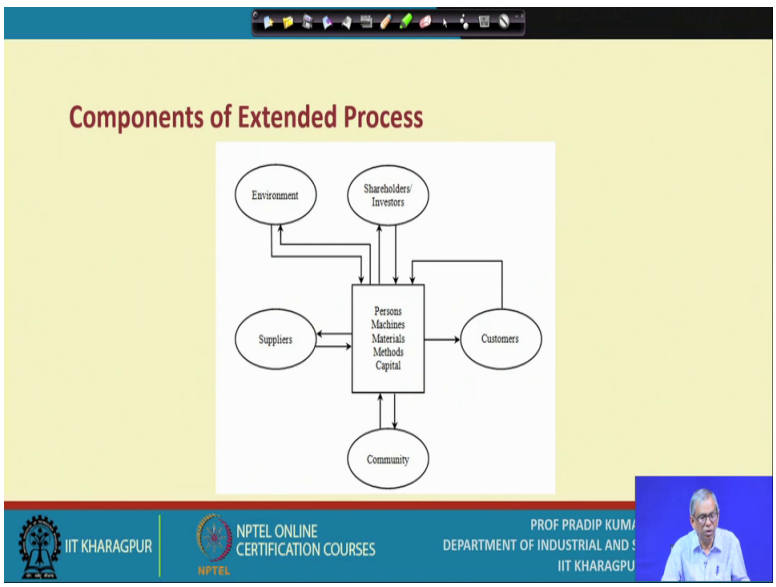

So, what we are asking for a long standing relationship between the company and the suppliers. So, what are the components of the extended process we have the environment is affecting companies performance the shareholders or the investors that directly responsible for investment required for you know the companies; companies sustainability and then the customers getting their products they are there the basically you know the consumers of the products, then the suppliers they are you know directly the controlling the production systems in supplying the items or the components or the raw materials required for carrying out the production system and obviously the community as large is it ok.

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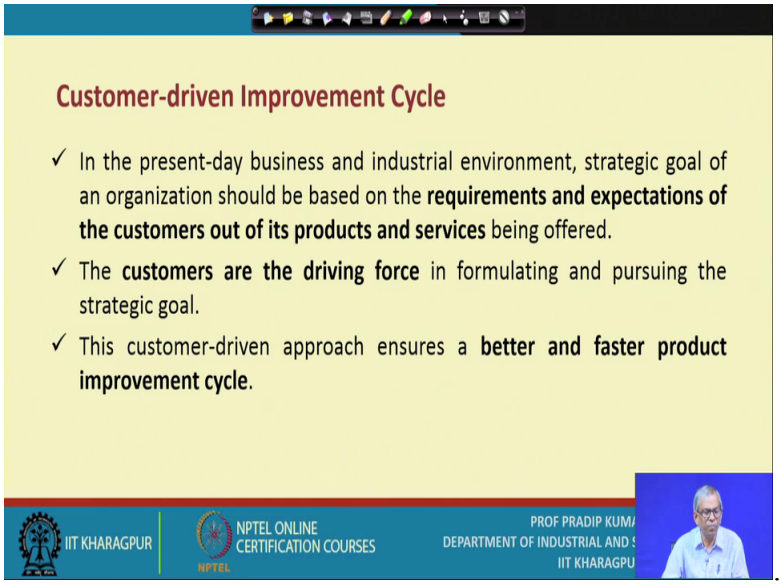

Now, the next important the principles I am going to discuss that is the improvement cycle. And you know we always say that these improvement cycle is for the customer, so that is why sometimes it is referred to as the customer driven improvement cycle, now let us you know high light the important aspects in these improvement cycle.

In the present day business and industrial environment strategy goal of an organization should be based on the requirements and expectations of the customers out of it is products and services being offered, that means the weather you know by offering the production services to the customers, whether you know you are able to fulfill the requirements and expectation of the customer that is key and the and the statistic

management of the top management of an organizations they are always concerned about these aspect.

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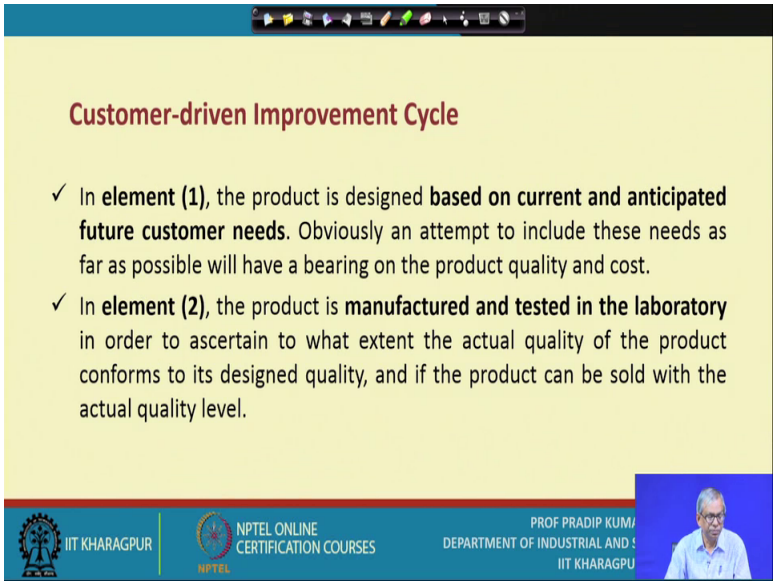

The customers are the driving force in formulating and perusing the statistical it is obvious and this customer driven approach ensures an better and faster product improvement cycle. So, there are you know the few elements there are four specific elements in this improvement cycle let me explain briefly each of these elements, in element one the product is designed based on current and anticipated future customer needs, so whenever we talk about design absolutely it is based on to what extent you can fulfill or the design is able to fulfill the customer needs and their requirements, obviously an attempt to include this needs as for as possible we will have a bearing on the product quality and cost sometimes you know you go for under design sometimes you may go for over design so both are not allowed.

So, what actually you have to do that means you create the product design in such a way that at a given point in time the customer requirements are exactly fulfilled. So, these aspect we talk about in element 1 in the next step element 2, the product is manufactured and tested in the laboratory in order to ascertain to what extent the actual quality of the product confirms to is designated quality and if that product can be sold with the actual quality level that means experimentation you have to do and within your it must be conducted within your control.

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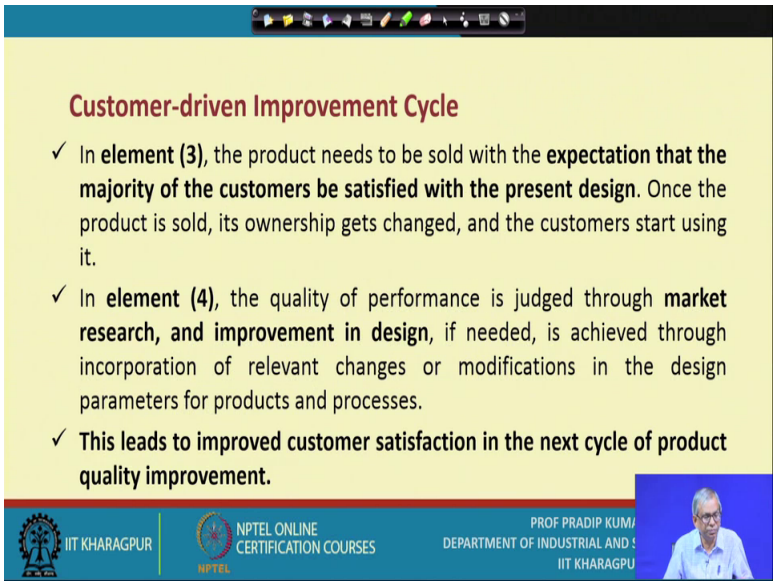

And with your conditions and these conditions you specify you know as based on the customer requirements in the next element 3 the product needs to be sold with the expectation that the majority of the customers we satisfied with the present design once the product is sold it is ownership gets changed and the customers start using it. So, this is you know it is obvious in fact that means you produce that product and you send it to the customers the ownership gets changed and then you check that whether the customer expectation is really fulfilled or not.

In the next element that is element 4 the quality of performance is just through market research and improvement in design if needed is achieved through incorporation of relevant changes or modifications in the design parameters for products and process, because you know the customer expectations are changing and so on so you know the designed levels is it.

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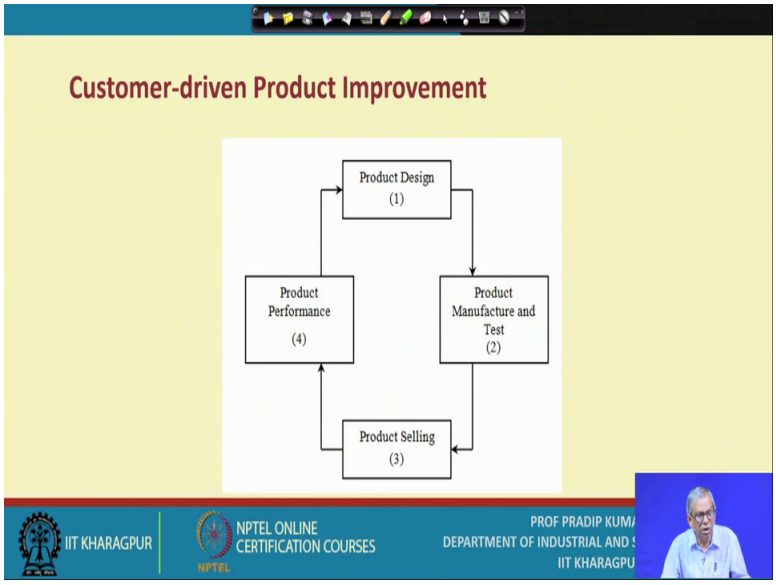

So, you have to keep one improving the design level, so that current and future customer requirements getting fulfilled, these leads to improved customer satisfaction in the next cycle of product quality improvement. So, there is the cycle and it is you know when the closed loop, so you have product design then you go for product manufacture and testing and then you go for product selling and then obviously you are evaluating the product performance and based on your evolution of product performance again you may go for a change in the product design, so the cycle continues ok so this is referred to as the product improvement cycle.

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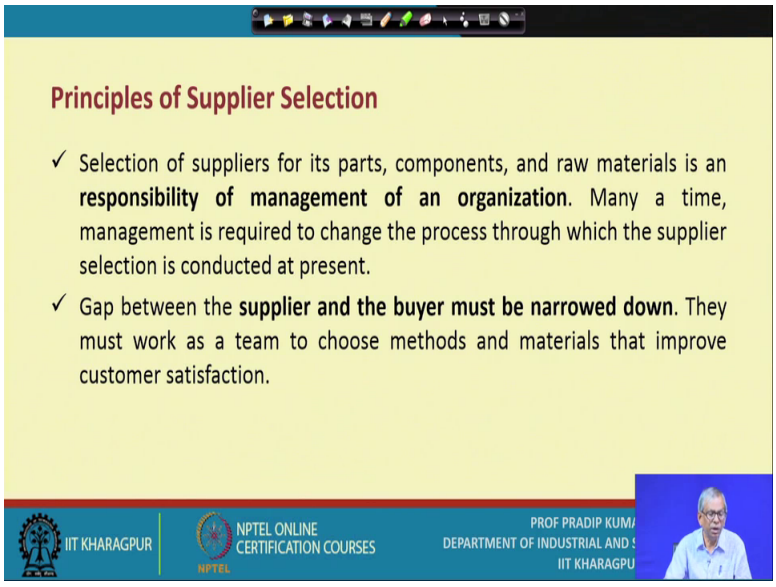

Now, the next one I am going to discuss that is what are the principles you should you should apply while you go for supplier selection, now without it is an important activity supplier selection and if supplier selection is improper ultimately what you will find that many of the components may not be of which you are going to receive from the suppliers, they may not be of acceptable quality and ultimately you know if you use those inferior quality or the components and parts being supplied by the suppliers or the vendors ultimately the quality of the final product will be affected.

So, selection of the supplier is very important and while you select the supplier certain principles you have to follow or you have to you know they adapt, so selection of suppliers for it is parts, components and raw materials is a responsibility of management of an organization. Many a time management is required to change the process through which the supplier selection is conducted at present that means each company each organization has it is a you know the purchasing policy has it is purchasing procedures and the purchasing cycle the kinds of methods or the kinds of procedures you apply depending on the type of item you are going to procure from the suppliers.

So, there could be institutional purchasing there could be capital equipment purchasing there could be raw materials purchasing but whatever but the different types of you know the purchasing systems you may have but whatever may be the purchasing system or the purchasing procedure certain principles you have to you have to follow, so the gap between the supplier and the buyer when the buyer must be narrowed down, that means you have certain expectation as a buyer and the supplier is trying to fulfill your expectations, so whether there is a gap between these two, so this is to be this gap must be narrowed down as the you know as the time passes they must work as a team to choose methods and materials that improve customer satisfaction.

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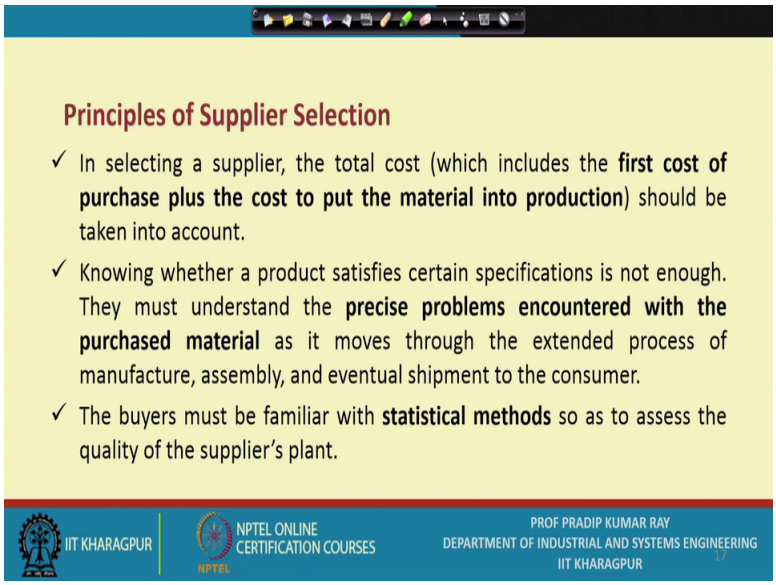

That means when you look at the organization as an extended process obviously you know we never say that this supplier is existing outside of the company. So, it is a part of the system, it is the part of organization of systems, so it is expected that the customer and the supplier they work closely. So, in selecting a supplier the total cost which includes the first cost of purchase this is the point to be noted many a time this is ignored the first cost of purchase plus the cost to prove the material into production, that means you know the first cost of purchase versus the total cost of purchase so when you consider the cost to put the material into production and what sort of difficulties you may be getting when you use a particular material in a process, so there is a cost associated with it.

So, the always you know you have to take a decision whether you will go by the first cost of purchase or you will go by the total cost of purchase, obviously you must have a mechanism in your system with which you are able to estimates the total cost of purchase so this is very important while you select a particular supplier. The next important principle relates to knowing whether a product satisfied certain specification is not enough, they must understand the precise problems encountered with the purchase material.

This is very important, as it moves through the extended process of manufacture assembly and eventual shipment to the consumer that means what is required that means

the item may be supplied may be supplied by a particular supplier and now apparently that particular item need to be conforming to the specifications, but it does not necessarily mean that even if the item conforms to the specifications it may not create problems in maintaining quality in the manufacturing cycle or during assembly or when you try to shift the product or you try to distribute the final product to the customers.

So, also sorts of problems related to a particular supply you must be aware of in the entire the cycle of shipping the product to the customer. The buyers must be familiar with the statistical methods so as to assess the quality of the suppliers plants obviously there will be variability in the suppliers items quality and the so you need to assess the level of very little and that is why the statistical methods you need to use.

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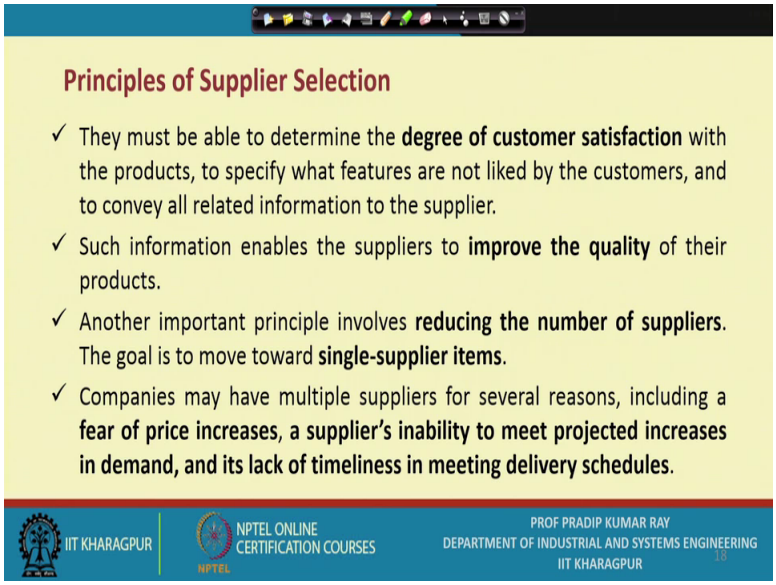

Now, they must be able to determine the degree of customer satisfaction with the products to specify what features are not liked by the customers and to convey all related information to the supplier this is very important that means the through study is required of of that product or the items which you are which were getting from the suppliers. So, such information enables the suppliers to improve the quality of their products, so it is a continuous improvement in quality.

So, that philosophy the supplier must also believe in ok. So, on these aspects; that means whether there is a variability inequality, so this information must be passed onto the suppliers another important principle involves reducing the number of suppliers this is

very important the goal is to move toward single supplier items, what if the companies have noticed that for any item suppose you go for a single supplier situation single supplier condition you will find that you have no other alternative but to go for a long standing relationship with the suppliers.

So, ultimately it pays of whereas, the traditional practice had been that against a particular item, you try to have more than 1 suppliers the basic idea is that there is may be some certainty in getting a particular say item from a given supplier, so you want to give an alternative sources of supply ok so this is the main reason but this is the traditional approach.

So, the companies may have multiple suppliers for several reasons we already know including a fear of price increases a suppliers inability to meet projected increases in demand and it is lack of timeliness in meeting the delivery schedules that means as out of the total requirements you say the 40 percent of the requirements will be supplied by the supplier A remaining 40 percent by supplier B and the rest 20 percent if your requirements will be supplied by supplier C.

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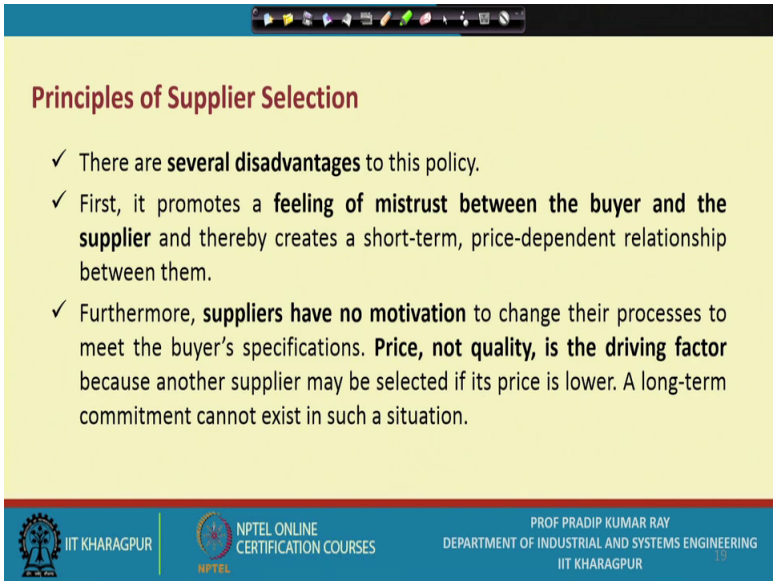

So, this is the traditional approach and so there could be different the disadvantages already the many companies they have been facing and so like say feeling of mistrust between the buyer and the supplier and the suppliers may not be have any motivation to change their processes to beat the buyer specifications twice not quality is the driving

factor because another supplier may be selected if it is price is lowest. So, whenever you have multiple suppliers against a particular item a long term commitment cannot exist and so obviously when you talk about the total cost of purchase in the long term so what do you expect there is the total cost of purchase should come down over the time periods, but if you know if entire the relationship you know the between the supplier and the buyer is based on mistrust so how can you have a sustainable purchase system.

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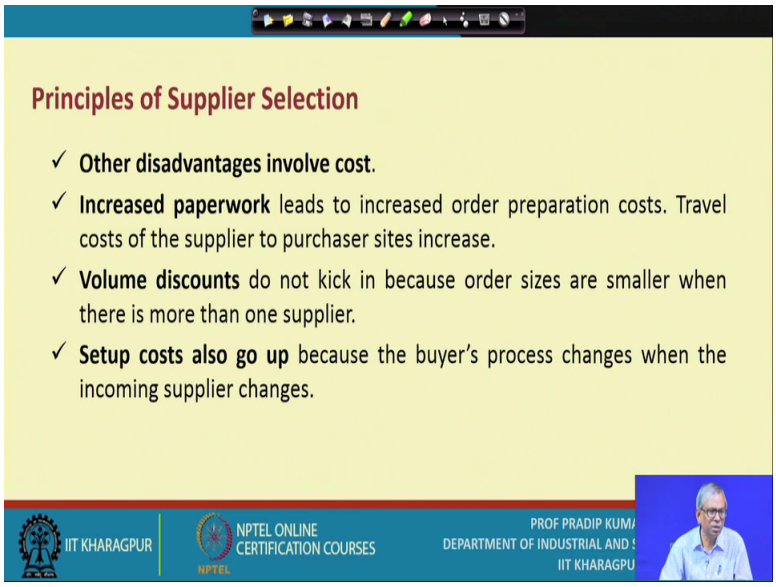

So, you know that the traditional approach what we say that relationship between the supplier and the buyer is like a you know the dog eat dog relationship, that means if you kill my dog I will kill your cat, so that is sort of situation you know must not you must not create in any organizational the system and what you go for you know you say a single supply or say you know the single supply cases single supplier system that means whole supplying.

So, other disadvantages involve cost increased paper work if you have more number of suppliers this is to increase order preparation cost travel cost of the supplier to purchase the sites increase, volume discounts do not kick in because order size is a smaller obviously that means the total you requirement is split into several orders, so the order size against each supplier is expected to be very less, obviously you know you may not get say the discount or the price discount or the volume discount whatever you say, so the order size is a smaller when there is more than one supplier and set up cost also go up

because the buyers process changes when the incoming supplier changes and if you look into the through put time of a given product in a particular manufacturing systems. So, you must have adequate control on the set of time, so the set of time should be as minimum as possible because if the set of time is more set of cost will be more, so if you if you have a multiple the supplier system for a for a given product obviously the set of cost is excepted to be here it to be higher and ultimately it will have a bearing on the total production cost.

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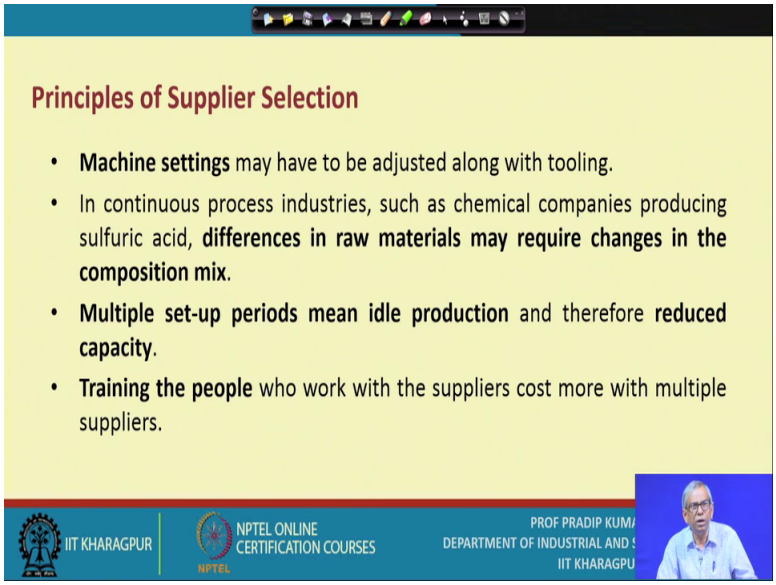

So, what you need to do that means the machine settings may have to be adjusted along with the tooling and in continuous process industries like in a chemical plant such as a chemical companies a producing sulfuric acid difference is in raw materials may require changes in the composition mix. So, what is the assumption assumptions that that suppose you try to you get you know the materials the raw materials from three specific suppliers it is most lightly, that that the quality of the raw material may vary from one supplier to another and so obviously in a continuous process industries if the raw materials quality vary obviously you have to what you have to do that means you need to change the composition mix all the time.

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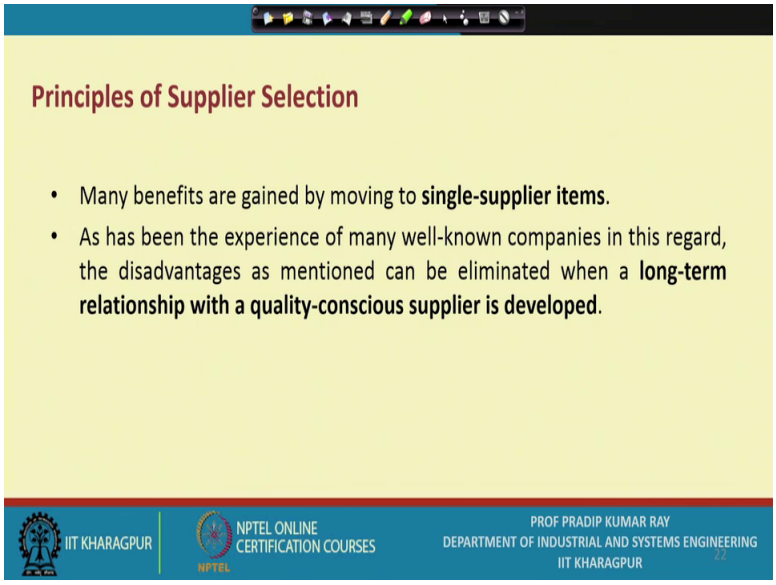

So, this will have a bearing on the manufacturing throughput time or the process cycle time. Multiple set up periods main idle production and therefore reduced capacity so these are the you know the impact of you know you know variability in the set of time, training the people who work with the supplier cost more with multiple suppliers. So, these are the you know the points you should look into and that is why you know many companies these days they are trying to opt for a single supplier or single supplier based system, that means against each item what you try do you must select the best possible supplier and then you continue with the practice of single supplier for each item.

So, there are many benefits and has been the experience of many well known companies in these regard, the disadvantage is as mentioned for multiple the supplier situation these disadvantage all these disadvantage which we have mentioned can be eliminated when a long term relationship with a quality conscious supplier is developed.

So, with this basic introduction of say the principles of supplier selection, you may definitely you may relate that that quality of purchase system to what extent it is effecting the quality of the product. That means whatever activities you carry out within increasing system now into look into that whether these activities are acceptable to you or not and whether these activities are of are of or having adequate quality or not.

So, this must be branded as the quality activities and then only if you assure that the system is perfect, system is a quality system whether it is for purchasing or for marketing you will find it will have a significant bearing on the product quality as well as the

process quality. So, these are the three principles we have highlighted in the next lecture session I will be high lighting many more such principles which must be you must follow or you must you know adhere to for management of quality.

Thank you.