Operations Management
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Lecture – 47
Total Quality Management (TQM)

[FL] Friends, welcome to session 47 in our course on Operations Management and as you are aware we are currently in the tenth week of our discussion. We have already completed discussion for 9 weeks and in these 9 weeks, we have tried to understand that in operations management, we need to take certain strategic decisions starting from what must be our product, what we must produce then we have to see that what is the number or the quantity of products that we must produce. Then we have to answer the question where we have to produce, this product where the facility must be created, where the plant must be located.

Then we have to see within the plant west what must be our layout, what type of layouts we must use in different types of manufacturing activities. Then we have seen that how we can schedule our operations; also we have try to understand that how the project scheduling can be done. Now we are currently discussing that once we know that what we have to produce, how much we have to produce, how we have to produce it we have to see that our focus must be on quality we must try to produce a good quality product so that the customer is satisfied with our product, and he buys our product is he is loyal to over the company, and he repeats his purchases a year after year or maybe whenever he wants to change the product must come to our company only as a loyal customer of our brand.

So, that we have to ensure and therefore, each one of us must appreciate the concept of quality and how quality can be implemented in an organization that is something important that everybody must know every engineer, every manager must know and in that context, there is a management philosophy, management thought which is called as the total quality management. In most of the universities it is an important course in the curriculum of engineers, irrespective of the branch in which they are specializing; it is across the disciplines that this course is taught to all the engineering students, engineering graduates as well as to the managers why? Because in today's scenario in

today's competitive world; where for a single product, there are 8 to 10 to f15 different companies manufacturing the same product.

The concept of quality has assumed much more significance as it used to be in the last maybe 40-50 years therefore, a product with good quality will only be able to sustain its market share otherwise it is going to be obsoleted from the market on its own there is no maybe reason that the product must not be obsoleted it if it is not a good quality product. And if we see the quality products have lived the test of times and are still being used, and those which were not able to satisfy the customer which were not designed as per the quality, which were not manufactured as per quality specifications have disappeared into oblivion.

So, therefore, the TQM concept is an important concept, and as manager as engineer all of us must emphasize this concept all across the organization so that, everybody who is associated with the organization must effectively and efficiently work towards the objectives of quality so, that the organization also moves forward it progresses, which will automatically lead to the progress and improvement of the individuals associated with the organization.

Therefore, today our topic will be total quality management, and we will try to understand this basic concept that what total quality is all about a total quality management is all about, what is the definition and how we can implement this. Although the time allocated for this topic in our course on operations management is not that large maybe we have one session only on the concept of TQM, but we will try to understand at least the basics of TQM or the philosophy of TQM.

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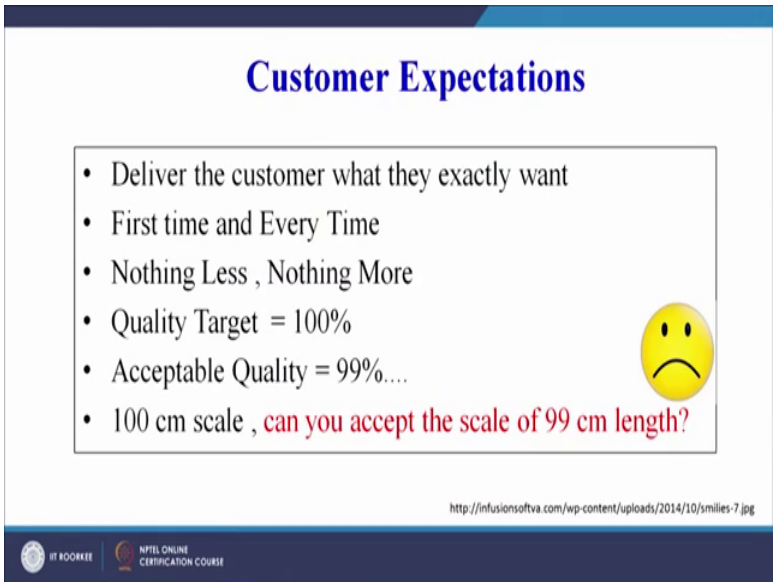

Now, the customer expectations are supreme in today's scenario and on your screen you can see that deliver the customer what they exactly want. As in the previous session also our focus was on concept of quality and we have seen that we have quality of design quality of conformance quality of performance. So, as a manufacturer it is our responsibility it is our duty to ensure the quality of conformance and performance as well as to ensure the good quality of the design, which is much more dependent upon the customers feedback, customers needs, customers requirements direct needs as well as the implied needs.

So, we have to deliver the customer what they exactly want. Then our focus must be that we must be able to produce the first time first product, first time the right product first time and every time the right product, that is we must focus on eliminating the waste in terms of defective items or production of defective items nothing less nothing more. So, we will see in our subsequent sessions, we are going to discuss materials management where we will see that we must order what is exactly required.

So, it should not be more because then it will add to the inventory cost, also we must not add order less so that, there is a condition or a situation of a stock out and the production or the operations have to be stopped.

Similarly, from quality point of view also, it should be nothing less and nothing more. Quality target must be 100 percent, acceptable quality may be 99 percent which I may be

slightly disagree we must focus on 100 percent quality only with the type of technology, with the type of inspection metrology instrumentations available with us these days, we must focus on 100 percent quality. For example, if a 100 centimeter scale is the exact dimension exact specification of the product; can you accept a scale of 99 centimeter length? So, as a customer I will never accept that scale. So, our focus has to be on 100 percent quality.

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Now, what is total quality management? The question mark signifies that we need to understand this concept of total quality management and as you see it is made up of three words, total, quality and management. The total means it is made up of the whole which means that if an organization decides to go for quality or to go for TQM, it cannot be in bits and pieces or it cannot be department wise it has to be whole that is total then quality all of us know degree of excellence a product or service provides.

So, quality as we have seen that it is fitness for use there were a number of definitions which have which we have seen in the previous session. So, quality is well known to all of you, and coming on to the last word that is management. That is our actions we have to plan in such a way that this quality product is produced in the organization and is delivered to the customer and it satisfies the intended function for which the customer is buying the product; So, the act art or manner of planning controlling and directing with an objective of ensuring the quality.

So, therefore, TQM is the art of managing the whole or complete to achieve excellence in terms of product. Why I am saying product because if the product is of good quality, it means that the preceding operations and materials procurement and all other functions are of good quality why? Because a product is a reflection of the procedures and the operations that have fall that have been employed to produce this product for example, for an educational institute the product is the student who graduates from that institute or the college.

So, if the student comes out with flying colors and the company which has hired that individual or that student is extremely satisfied with the performance of that student or the alumnus of a particular institute, the company will definitely be proud of the organizers the student as well as the company will definitely be proud of the institute from where the student has graduated.

There will be no doubt about the capability of the institute to produce wonderful intelligent and brilliant professionals which are going to serve the organization. So, the process of graduation will be certified that yes the process is good, the sessions or the lectures or the process examination system everything is ok. Therefore, only the product in the form of the graduating student which has come out is of good quality.

Therefore, our focus has to be on each and every maybe step involved in the overall product development cycle so that our total quality is ensured. So, we can see another definition on the screen.

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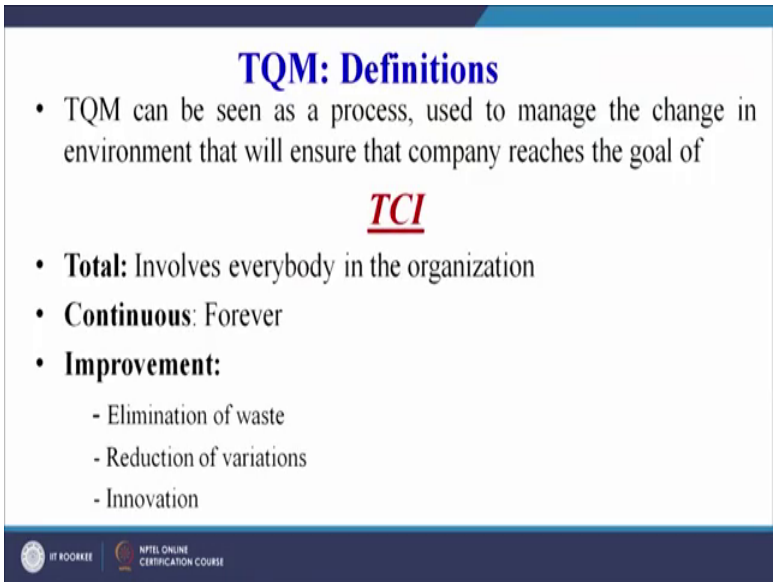

The TQM can be seen as the process used to manage the change in environment that will ensure that company reaches the goal of TCI, but what is TCI that we are going to understand in this slide so, but before going to TCI let us first see what TQM is all about. So, TQM is seen as the process why a process because it is ensuring a continuous improvement. So, the process is continuous, it has seen as a process which is used to manage the change in environment.

Now, this process will be companywide it will be plant wide, it will be organization wide. So, it will be in totality ensuring that you change for better you change for better methods, you change for better inspection techniques, you change for better hr managing and management, you change for better financial procedure.

So, the process is of change and TQM is will ensure it can be seen as a process used to manage the change in the environment, that will ensure why do we need to change why do we need to change all these procedures all these processes in order to ensure that the company reaches the goal of TCI.

Now, TCI is total continuous improvement. Total involves everybody in the organization continuous means forever an improvement means we need to eliminate the waste we need to reduce the variations of a in the product as well as improvement in the innovation or the creativity among the employees. So, we focus on TCI. So, it is a process which will lead to this change in the overall lead to the or manage the change

which will lead to the improvement in the TCI or the we can say total continuous which will lead to the total continuous improvement.

So, we can see that it is companywide, it is continuous process and it is leading to a positive change in the organization, and this change will automatically lead to better productivity better employee satisfaction, and in nutshell better profits for the organization; Another very good definition given by ISO.

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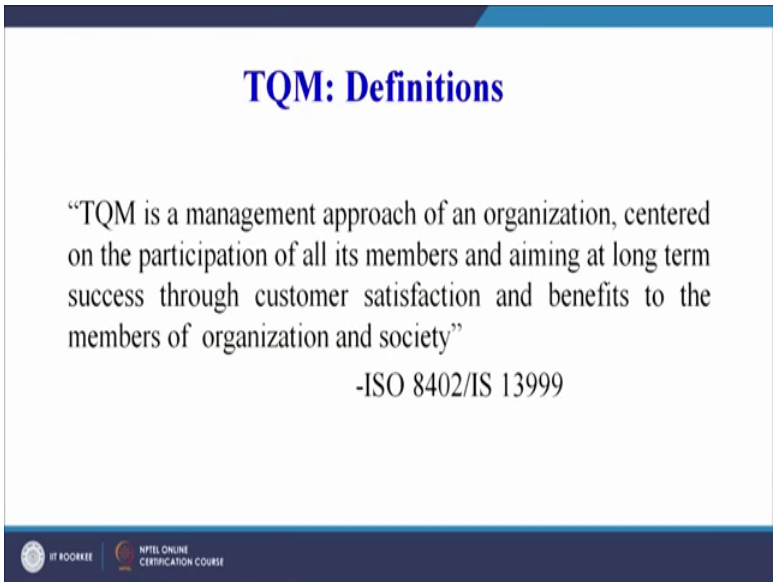

TQM is a management approach of an organization in the previous definition we have said that it is a process to manage the change within the organization to ensure that the company reaches its objectives of TCI. Here we are saying it is an approach of an organization centered on the participation of all its members and aiming at long term success.

So, another two words are again coming total that is participation of all its members. So, total word is coming there and aiming at long term success which is a continuous process. So, long term sub success, how it can be achieved? It can be achieved through customer satisfaction and benefits to the members of organization and society.

So, again I will read now the definition as a complete definition, TQM is a management approach of an organization. So, we can also call TQM as a management approach.

Centered on the participation of all its members and aiming at long term success through customer satisfaction and benefits to the members of organization and society at large.

What is the goal of TQM? Now what we tend to achieve we have seen so many definitions. So, just to summarize do the right things right the first time and every time.

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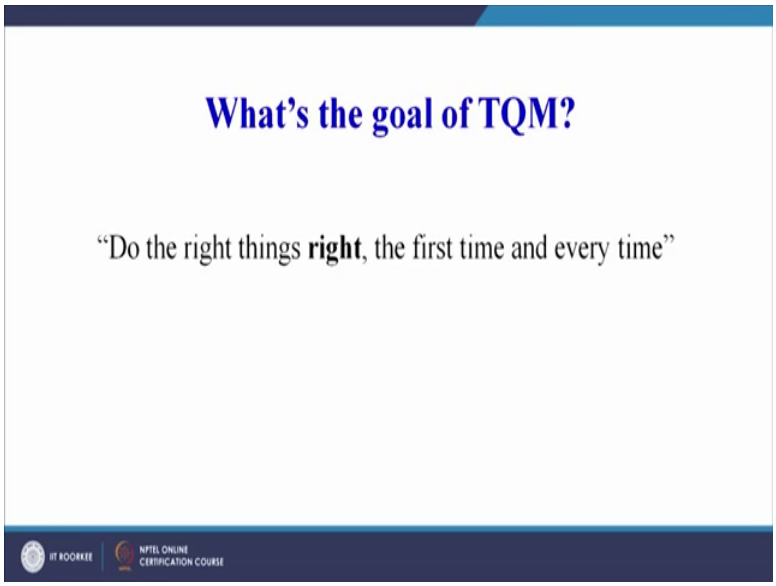

So, do the right things which means that it will help us this management approach will help us to identify that what are the right things to be done in an organization. Then doing the right things right which means we have identified what needs to be done, then we have to do it perfectly efficiently and effectively.

The first time it should not be a iterative process it should be done right the very first time and every time that is it has to be continuous it cannot be a stopgap that the now I am doing everything correctly, but after some time I start making mistakes. So, those mistakes are avoidable and must be avoided. So, do the right things right the first time and every time.

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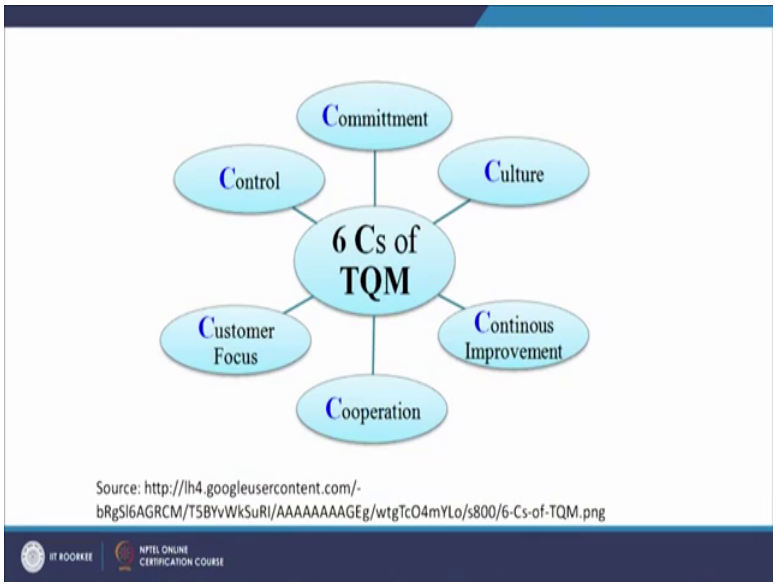

Now, there are 6 cs of TQM we can see, we can start from the top commitment which in which means that total commitment from the top or the strategic team to the operational team of the organization. So, that total commitment must be there, quality culture must be there, each and every employee must be aware of the concept of quality and must be aware what is his role in ensuring the quality of the product, where he is participating in ensuring the quality of the product.

So, that quality culture is very important, then continuous improvement. Always we have to manage the system in such a way that continuously we are towards the path of improvement cooperation among the various stakeholders is very important for ensuring the quality, customer focus is the most important point and the most important C from TQMs point of view, that our approach must be customer centric what the customer actually wants and if we are able to satisfy the quality needs of the customer the company will definitely move on the path of progress and the project trajectory we can say or will be towards the profits as well as the financial stability.

Similarly, the control so, we can see that the 6 Cs if we combine them together if there is a commitment from the top there is a quality culture within the organization the organization is focused on always improving the quality continuously improving the quality, and there is a cooperation among all the various departments within the organization, that designs the operations are focused on customer point of view or the

customer's needs and requirement and in and if there is a control on whatever changes have been planned, documented, executed if there is a control on these changes definitely the TQM philosophy, TQM approach, TQM process will yield the desired results for the organization.

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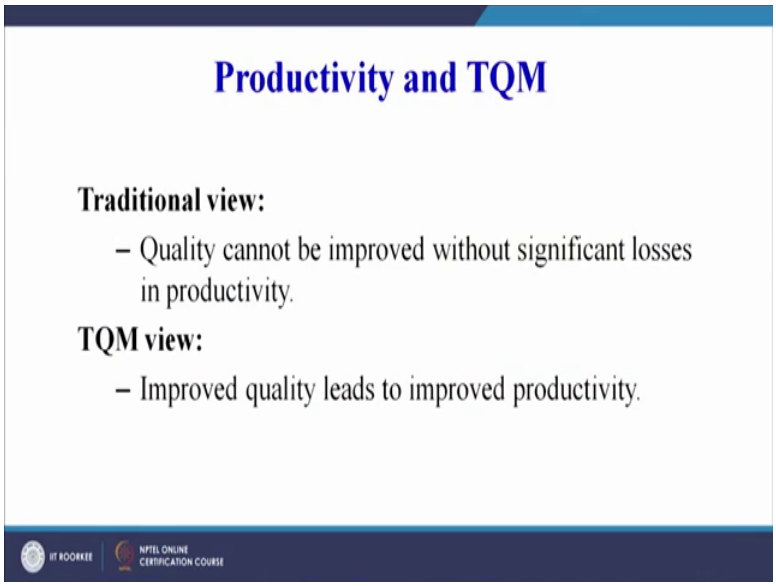

Now, productivity and TQM normally the traditional view is, that quality cannot be improved without significant losses in productivity. Usually we feel that if in order to ensure quality again and again we are checking the quality of the product, we have different inspection state may be stations within the production line. So, normally people feel more inspection, more breakages do not add any value to the product and the lose it loses time also. So, the productivity becomes less, but know the TQM approach says that improved quality will lead to improved productivity.

So, we can plan we can change our inspection procedures in such a way that we are able to inspect also and we are not compromising on the productivity of the production line also. So, TQM will help us to design our production line in such a way that, we are able to achieve the dual motto of inspection also as well as high productivity also.

So, the traditional view that quality cannot be improved without compromising the productivity is I think a completely false view, and in these days companies are focusing on TQM and TQM implementation is leading to higher productivity as compared to the traditional approaches of management.

Now, what are the basic principles of TQM, basic tenets of TQM we can see here whatever I think we have discussed by now everything has been summarized in this slide.

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The customer makes the ultimate determination of quality. So, as we have seen the 6 Cs of TQM customer focus must be there if we want to implement the TQM philosophy. The top management must provide leadership and support for all quality initiatives. So, as per 6 Cs, we can say commitment and culture is coming here in point number 2. The top management commitment must be there and there should be quality culture within the organization.

Preventing variability is the key to producing high quality. Now preventing variability if you see the control aspect is coming here, how we can prevent the variability by exercising control. So, the c of 6 Cs of TQM is coming in to point number 3, that is preventing variability is the key to producing high quality by exercising control. Quality goals are a moving target thereby requiring a commitment towards continuous improvement. So, C for continuous again is coming a 6 Cs of quality or TQM. Improving quality requires the establishment of effective metrics we must speak with data and facts not just opinions or gut feelings.

So, our intuitive appeals or what we feel as an individual does not play any role the things must be run by procedure, the systems must be runs by run by rules regulation

policies and procedures. So, what whenever quality is being discussed it might it must be discussed in terms of facts and data instead of may be feelings or gut feelings or intuitive appeal. So, the total quality management approach will focus on facts and data maybe instead of focusing on the gut feelings or intuitive appeal of individuals.

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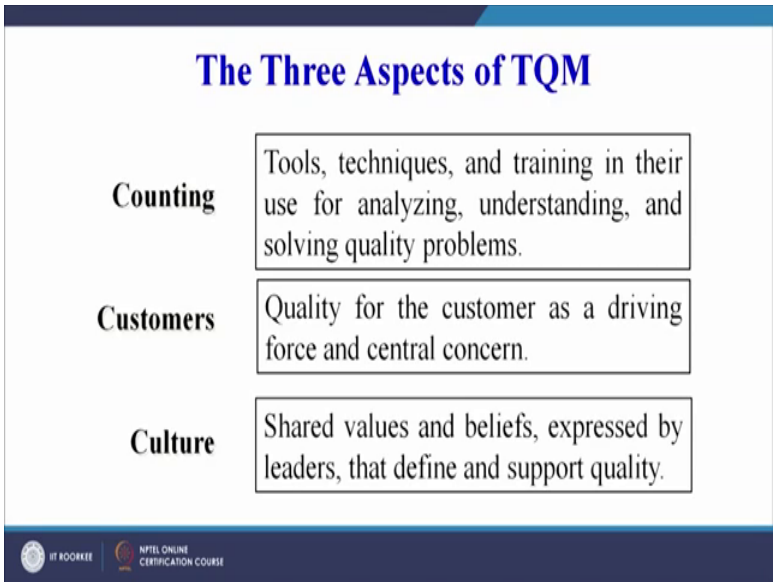

Now, the three aspects of TQM quickly we can conclude here, counting tools techniques and training in their use for analyzing understanding and solving the quality problems.

So, the three aspects first is the counting as we have seen our approach must be focused on facts and data, it should not be just a rhetoric that we want to implement TQM, we must have the relevant data also relevant facts also available with us if we want to successfully implement the TQM philosophy or approach.

So, counting will give us those facts and data, the counting what are the tools, what are the techniques and training in their use for the analyzing. So, maybe what are tools techniques one thing, how to use them the training must be given to the employees and then if that data whatever information we are deriving from these tools and techniques, it can be used for analyzing understanding and solving the quality problems.

Then with the other focuses again and again we are emphasizing the same point customers, quality for the customer as a driving force and central concern. So, whatever operations we are doing within the organization must be focused on customer as the king

that we have to produce a product which satisfies the demand of the customer then the cultural part that is shared values and beliefs expressed by leaders that define and support quality.

So, these three aspects we must focused on facts and figures and data's and tools and techniques that is the counting maybe that is giving some you can say specific details to the quality that is the counting then the customers and finally, the quality culture. TQM and continuous improvement I think already I have highlighted all these points. So, quickly I will read them.

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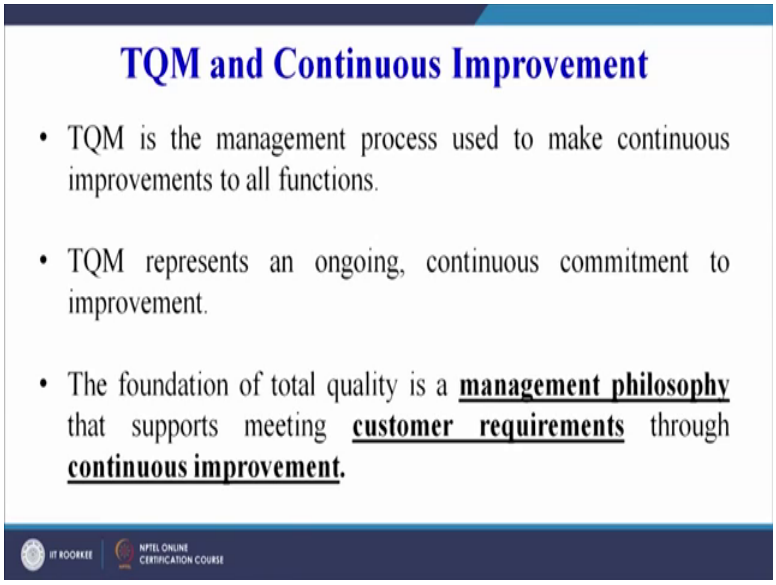

TQM is the management process used to make continuous improvements to all functions TQM represents an ongoing continuous commitment to improvement, the foundation of total quality is a management philosophy that supports meeting customer requirements through continuous improvement. So, everything has been explained earlier.

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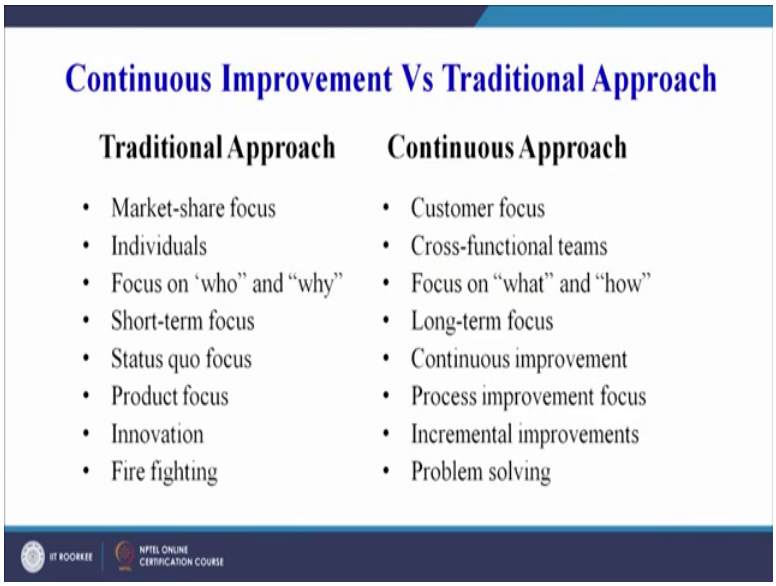

Now, continuous improvement versus traditional approach we can see. In traditional approach market share is the focus, but in continuous approach customer is the focus.

Similarly, in case of traditional approach focused on individual, but continuous approaches focused on cross functional teams which mean that people from different specializations combine together to ensure the quality of the product. So, another most important fact is that traditional approach is focusing on short term whereas, the continuous approach is a long term focus or maybe our focus will be on continuous improvement in case of TQM.

So, mostly in case of traditional approach we go for firefighting, there is a problem we start addressing that problem, but in continuous approach we will be going for problem solving one by one and it this problem solving approach will be a continuous endeavor in the organization. There are other maybe we can say differences the last one that I want to emphasize is in traditional approach we focus on the product or the product is the focus whereas, in continuous approach process improvement is the focus and already I have highlighted that is our process is a correct product automatically is the output of this correct process.

So, if a process is wonderful process, is excellent process, is defect free process is any other adjective you can use then automatically the product will be of good quality and in

continuous approach our focus is on designing the system in such a way that it only gives out the best product only.

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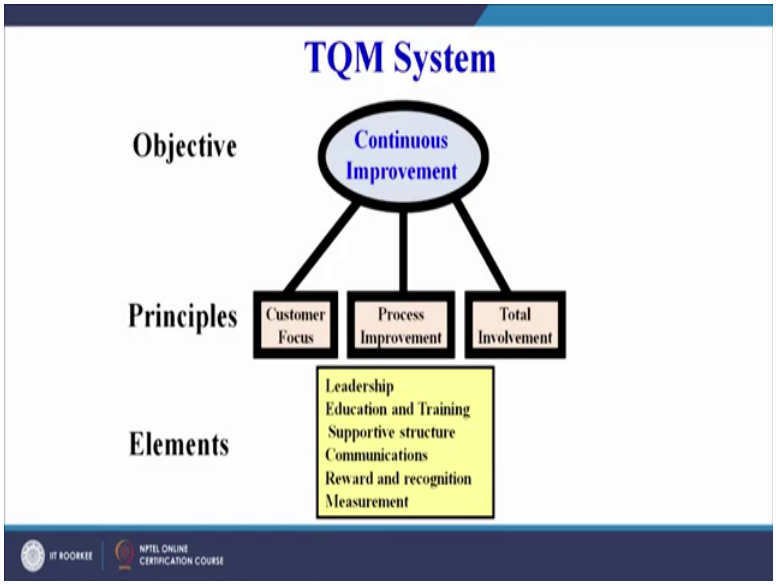

Now, the TQM system I think the last part for today's session, continuous improvement is the objective the principles are customer focus process improvement and total involvement of each and every employee each and every system of the organization. And what are the elements that can help us to achieve these objectives? Leadership, education and training, supportive structure, communications reward and recognition and measurement.

Some in some of the companies we have quality circles and there is a award scheme whichever quality circle will give the best possible solution to a existing problem the awards can be given. So, measurement is also which is that control part of TQM; we can check that, whether whatever changes we have proposed what type of benefits can be derived out of them.

So, this is I think a total TQM system objective is continuous improvement, then there are certain guiding principles which will help us and there are elements which we need to focus on in order to meet the objective of continuous improvement.

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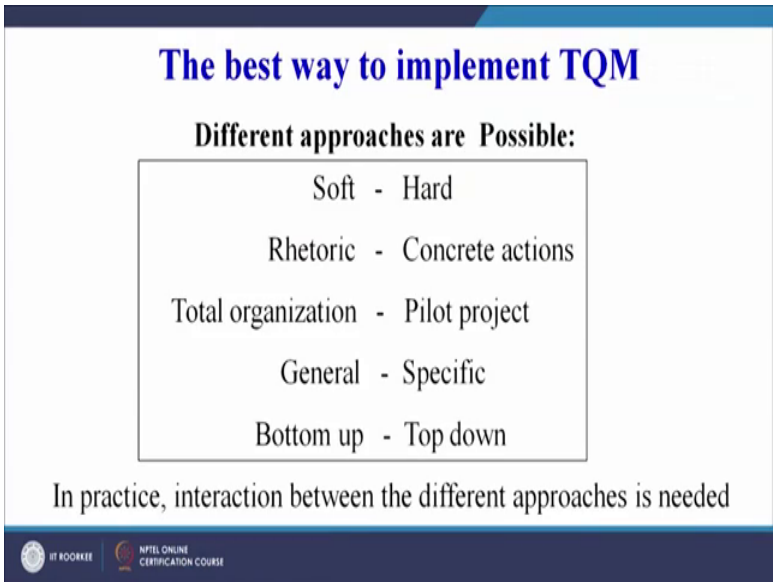

The best way to implement TQM is different approaches are possible soft approach or a hard approach a rhetoric or concrete actions total organization or a pilot project general TQM implementation of a specific TQM implementation bottom up approach starting from the lower level to the higher level or it can be top down that you start the philosophy or approach a total top level and then you make it stepwise you bring the TQM principles to the lower level. But in general if we say it has to be implemented in a way that everybody is involved in the TQM endeavors.

So, in practice we can say summarize interaction between the different approaches is needed. That single approach may not give us the desired results. So, we can combine these all approaches to get the desired results.

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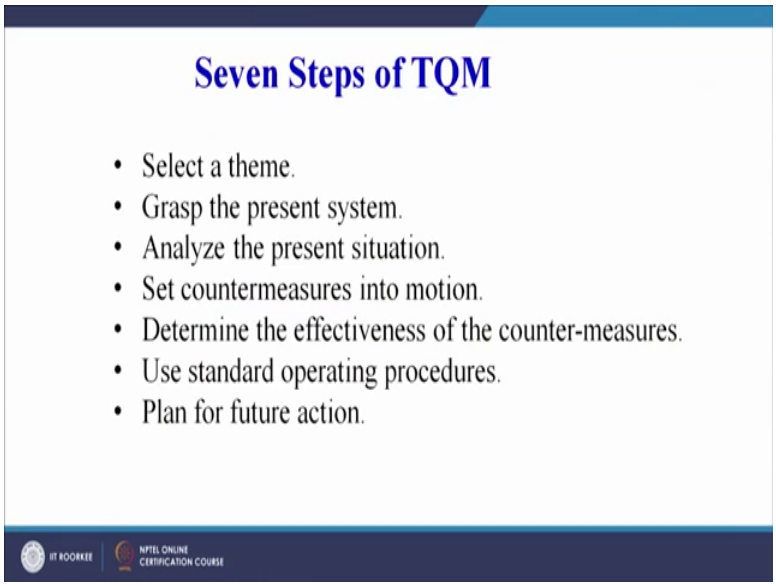

Now, there are seven steps of TQM quickly I will read these points and then conclude we have to select a theme, then grasp the present system what is the current way of doing that particular job, analyze the present situation, set the countermeasures into motion determine the effectiveness of the counter measures use standard operating procedures and plan for future action.

So, this is a standard approach usually followed whenever we want to bring a change. So, we have to first understand the current way of doing the work or current way of managing the operations, then we have to see how better we can manage them, what are the alternatives available with us then we pick and choose analyze the alternatives we scrutinize the alternatives and finally, we feel this is going to be the best alternative in order to improve the existing condition and then we implement the chosen alternative and see how it works and then we document the all the process.

So, that in future we can look at the document and see that how we have designed this method or this process which has yielded the desired results. So, with this we conclude the today's session on total quality management, in our subsequent sessions we will focus on other important tools and techniques which can help us to manage our operations in a more maybe efficient and effective manner.

Thank you.