Operations Management

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Lecture – 02
Operations Management: Objectives

[FL] Friends, Welcome to session 2 in our course on Operations Management, in our session 1 we have covered the overall picture of the course, we have covered the overall course contents that we are going to cover in this course and we have seen that the course is divided into 12 weeks it is a 30 hour course in which we have 12 weeks of discussion, each discussion of 2 and half hours each and further subdivided into half hour units. So, in every week you will get 5 units of half an hour each. So, a weekly content will be of 2 and a half hours and for 12 weeks will be releasing a 2 and half hours content every week. So, that the total course duration will be 30 hours of overall discussion.

Now, we have seen that the title of the course is Operations Management. So, there are two words here, operations and management. So, we need to understand both of them in our; you can say endeavour to learn this course. First thing is operations. What are operations? I think all of you may be well aware and you can easily define operations. For example, in banking industry all of us may be using the banking for our day to day we can say financial transactions.

So, what do we do there, we go we fill certain forms and then we can withdraw the money. Sometimes for making a draft we fill a specific form, give that form to a particular person sitting on the counter and then we can collect overdraft maybe immediately or maybe after sometime. So, that is also an operation. We are giving a requisition and we are being served and our requirement is being met by the personnel who is sitting on a specific counter. So, that also we can call as operation. So, those operations are service sector operations.

Similarly, many times we go and we get a boarding pass from the airport. So that also is an operation. We are issuing a request and we are getting served and we are getting the output in the form of a boarding pass. So, there are a number of examples of operations, but when we talk about operations on the shop floor or operation in the manufacturing industry, we have a slightly different you can say understanding, our inputs are also

tangible, our outputs are also tangible. Now what can be the inputs in case of manufacturing? So, the inputs are may be men, material, equipment, machines, money.

So, we have a tangible input, which undergoes a transformation. Please remember the word transformation. So, there are certain inputs, which are transformed into a tangible output. For example, the shirt I am wearing, this shirt the input may be a cloth, the transformation is the stitching and the outcome is the shirt that I have bought from the market. So, they whenever we talk of manufacturing our operations means that we supply the raw material, it undergoes certain transformation and finally, we get our output.

Now, operations if we are able to understand management means that we have to optimally utilise the resources in order to achieve our overall objective. What is the overall objective? The overall objective can be to convert these raw materials or raw inputs into the final outputs, effectively as well as efficiently. We want that our processes or operations must be effective they must be efficient. So, managing that operation is the basic concept of operations management.

So, first word is operations that is the process of converting the raw material into the final product and management is the act of exercising the act of controlling or directing in order to achieve the objective of converting the raw materials into the final product. So, we will try to understand the basic concept of Operations Management, but before going to that, let me draw very simple diagram of what I have already explained.

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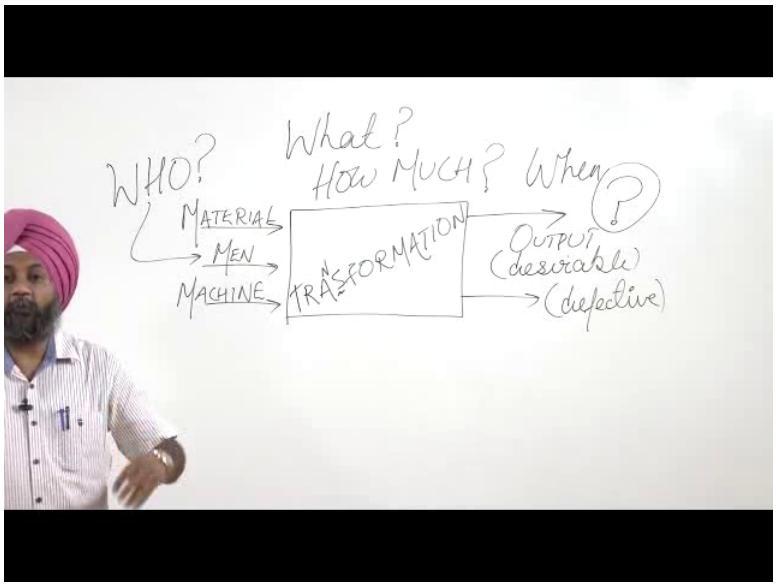

So, you can see basically, this can be our transformation and then we have certain inputs, just to name a few inputs, we can have material, we can have men as an input, we can have machine as an input and then there is transformation.

Now, transformation can be mechanical transformation, it can be chemical processing, it can be any form of transformation as I have told my shirt has been stitched. So, stitching is a process of transformation suppose we are doing a turning operation we are cutting the metal. So, cutting can be the process of transformation. So, here we have transformation here and finally, we have our output. Output can be desirable or this can be defects. So, we can ever desirable output or we can have defective output.

Now, the operations basically is the conversion of these raw materials using any form of transformation and getting the output. Output can be a desirable output or it can be a defective output. Now, this is the basic concept of operations. Now, coming on to the management now, management has to take certain decisions, now what are the decision? First thing is, what has to be the output, that what the company must produce or whatever the company or the organisation whatever is it producing, is it being asked or is there demand of that material or product in the market or not. So, what has to be produced is one question that is related to the product or the output the company is producing or manufacturing.

Second is how much? So, first question I write here is ‘what’. What the company must produce. Then, how much? So, these questions have to be answered. Then, there is another question ‘when’? So, we have to find answers to all these questions. Then, from the left hand side, we can say ‘who’? Who is going to produce? What is going to be produced? How much is going to be produced? When it is going to be produced?

So, there can be many other such questions that may come to a mind of a production manager and in Operations Management, we try to figure out that, how we can manage these answers, or how we can manage the answers to these questions? There can be other issues may be this diagram gives a very good picture of what we are going to cover in this course? We need to manage the materials.

When we should order? How much we should order? What type of materials we should order? So, opens up a completely new domain of inventory and Materials Management. There are latest trends in materials management, like Materials Requirement Planning (M R P) and we have to understand these concepts in today’s scenario. You know, company can survive without understanding or without utilising the latest trends being followed in industry or latest trends being followed in manufacturing industry.

So, we need to find out answers in term of ‘what to be produced’ that is the product. ‘How much to be produced’ that is sales forecasting, ‘when it has to be produced’, scheduling regarding materials we have to take a decision that how much material is required? What is the Economic Order Quantity? What is the ‘how to classify the materials’? When we should order the material? So, managing all this overall we can say operations comes under the broad umbrella of Operations Management and that is what we are going to cover in this course. The title of today’s session is Operations Management and the objectives of Operations Management.

So, I think I have tried to give you an overview of what we can expect in this course? So, what we are trying to basically understand is what has to be produced? We have a complete session on product design and development. We will see the product life cycle there. We will try to understand that how the product needs to be revisited or how the product needs to be re-designed in order to be effective in the market or in order for the company to sustain in the market, many times it may happen that when we understand the product life cycle, we know that after a particular duration of time the product sales

have to go down, the product demand will decrease, so we forecast that and we try to come up with the re-designed product a re-invented product, a modified product. So, that the product is able to capture new markets.

So, we will try to understand the product life cycle we will try to understand the concepts of Value Engineering. We will try to understand the design for manufacturing design for assembly. We will try to understand the Ergonomic design of a product. We will try to understand finally the rapid prototype. How to make a prototype quickly? So, we will try to answer this question 'what'. What the company must produce in order to be successful.

Then, we will try to answer the question, how much, 'how' means that how much are the sales required or what is the volume of sales that you are forcing. So, we will have a complete session on sales forecasting we will try to answer the question, 'how much'. We will see the qualitative methods of forecasting. We will try to understand the quantitative methods of forecasting we will see the simple average, moving average method, weighted moving average method also. We will cover the exponential smoothing method.

So, we will try to answer 'what to be produced' 'how much to be produced' 'when it should be produced' 'how to plan, how to schedule'. We will have a session a complete may be one week discussion on the project networks. We will try to understand the 'critical path method'; will try to understand the P E R T method. So, we will see, when regarding scheduling, we will see what we will see, how much.

We will also try to understand the management of materials or Materials Management. We will try to understand how much materials have to be ordered. What is the Economic Order Quantity and what are the basic you can see objectives of Materials Management. We will try to understand this transformation. We will not go into the actual process is that how the process operators, but we will try to understand that how, what is the capacity with that is company possess, how the capacity can be improved all that capacity planning, aggregate production planning, we will try to understand from the transformation point of view.

So, over all we will try to cover the management aspects of transformation of raw materials into the final product. So, that will be the overall you can say objective of our

course on Operations Management. So, whatever I have tried to explain with the help of this simple diagram we have, you can say put it into a presentation form also for all of you to understand and use it as a ready reference. So, quickly I will try to go through the presentation and try to explain what has not been covered with the help of this diagram.

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So, you can see this is the basic definition of Operations Management, the business function responsible for planning, coordinating and controlling the resources.

Now, what are the resources on your black white board you can see that the resources can be men, material, machines or other infrastructural resources needed to produce products and services for a company. So, what is the output? The output is the products that we are producing. So, the Operations Management is dealing with you can see 3 important words planning, coordinating and controlling. So, we have to see how we have to judiciously, effectively, efficiently use our resources. So, that our desired output is produced in the most cost effective manner and that overall you can say managing or planning of those operations, will fall under the overall umbrella of Operations Management.

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Then operations management, we can also understand as the systematic direction control and evaluation of the entire range of processes that transform inputs into finished goods or services.

So, here you can see in place of direction, in place of planning in the previous definition, here it is direction; rest I think more or less is the same. So, we have to systematically plan, we have to systematically direct our resources. So, that we are able to transform the input, that is men, material, men machine into the output, that is desirable or the services that are desirable.

For example, in an aircraft industry we can take example where there are flight to attendant. So, they are offering the services, they are offering the food, they are offering the drinks. So, we have to see that how we have to optimise our resources. So, that the customers are satisfied. So, in hospitality industry customer satisfaction is very important. So, in manufacturing industry also customer satisfaction is very important in manufacturing the customer will definitely buy a product if the product is of good quality.

So, how to transform the resources into a good quality product that is basically we can say following as a subset of Operations Management. So, we will we can say that systematic direction, control and evaluation of the entire range of processes that transform the inputs into the finished goods.

So, important point here is control and evaluation also, direction means that we have to plan the things properly and we have to issue the order, so that the transformation can take place smoothly. But we have to exercise control also, we have to see that whatever we have planned, whether the process is happening as per our plan or there are significant changes or there is significant deviation from the planned project or from the planned progress.

So, we have planned something and control will help us to exercise, you can say check on what is actually happening. If whatever is actually being recorded is as per the plan then we need not do any, you can say corrective actions. But if we have planned something for example, there is a forecast of 400 cars to be sold in one week may be next week we have to produce this 400 cars in the current week. So, that by next week our 400 cars are ready, but after fourth day on Thursday we see that we have only produce 200 cars.

So, we are at 50 percent. You can say, target and we have to further make 200 cars, but the days left are only 3 that is Friday, Saturday and Sunday. So, if we divide 400 by 7. So, we get that approximately we should make may be 57 or 58 cars per day, but after 4 days we are lacking may be by some numbers. So, we have to see that how to speed up how to manage. So, that we are able to meet the target.

So, our control is that we have checked after fourth day that what is the actual progress that is 200 cars, what was the planned progress, by how much cars we must have produced by the end of fourth day. What is the difference and how we can make up the difference what corrective action is required that is basically one example of control then we can evaluate at a later stage that why we were not able to meet the target, what were the problem area, how we can overcome this problem area then we can send a feedback to our inputs and then we can correct our inputs.

So, that we are able to meet the target in future. So, it is not only the process of planning, it is also the process of checking and controlling as well as at the later stage evaluating our performance. We can benchmark our performance as compared to the performance of the other competitive companies or the organisations.

So, we need to, we will be able to appreciate the course if we are able to understand and highlight that why we are discussing this course. Now this course is important because it

gives an overall picture of managing the operations. So, definition once again must be clear in everybody's mind that is a systematic direction control and evaluation of the entire range of processes that transform inputs into finished goods or services. So, it is not only related to manufacturing industry, but can also be used by the service sector or the hospitality industry also.

As, we have seen in the first session that what are the course contents there we have seen that it is not only the hard core shop floor activities only, overall picture we have to take into account. We have to take into account the environmental factors such as cultural political and market influences, which are not internal, but external factors. Now internal factors can be with the factors within the organisation that are influencing our decision making. External factors are like political market and economic factors, financial factors, cultural factors which are going to influence our decisions.

Similarly, inputs can be as we have seen here I have drawn a diagram there are other inputs also human resources capital that is financial. You can say aspect materials, land, energy, information customer. So, we have a wide range of inputs then the outputs can be goods or services and waste. So, I have already depicted. Output can be desirable it can be defective output also then customer. Contact customers can actively participate in transformation process, is self service in case of hospitality performance, feedback repair record, customer commands.

So, a feedback can be sent as I have told that if we are producing a defective item or we have sold a item in the marketing or sold a product in the market and there are few defects related to the product being reported by the customer, we can definitely send a feedback and try to change the inputs or change the transformation process so, that the defective or the defects can be rectified. So, this is the just overall picture of Operations Management.

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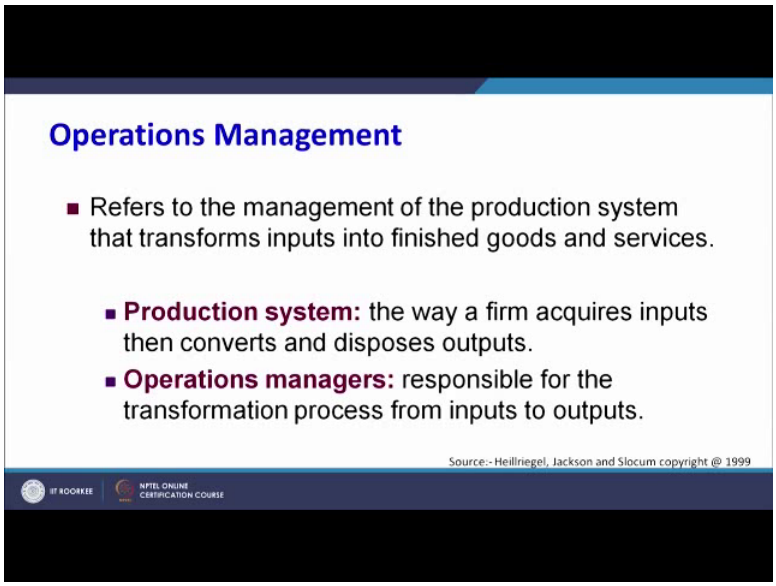

Now, it refers to the management of the production system that transforms inputs into finished goods and services some of you may be wondering why same and same sentences are coming into picture? The importance has to be highlighted number of times. So, that it gets ingrained into your thinking power or thinking process.

You are may be easily able to answer the sentence, gives the same meaning that was given in the previous slide also, but this is to retreat the definition, so, that all the learners can remember because the first question can be you have completed the course on Operations Management. How do you define Operations Management, so, you are able to give a single sentence definition of Operations Management.

Now, production system is a word which has come in the definition what is a production system I have already drawn the production system there the way may acquires, are inputs and then converts and disposes the output. So, this is the, you can say production system there are inputs, there is a transformation and there are outputs then operations manager the people who are responsible for the transformation process from inputs to outputs again the same as you on your screen.

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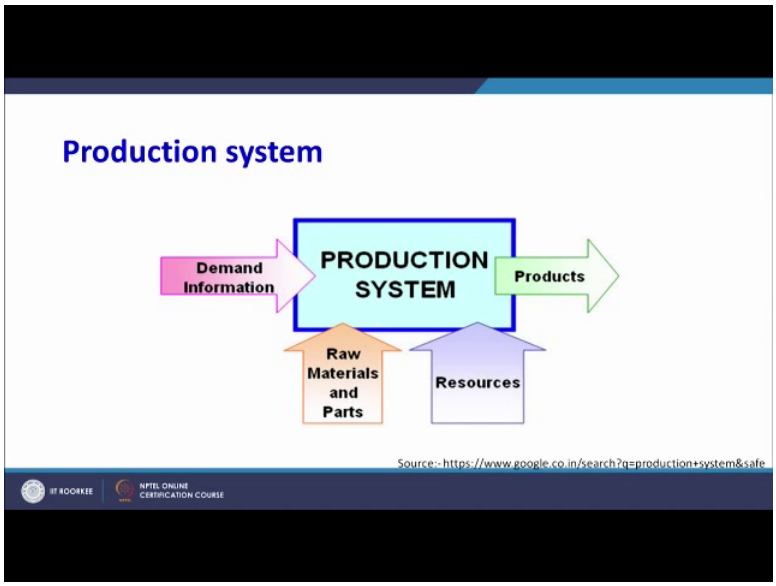

You can see that production system, how it looks like there is a demand information then there are raw materials and parts and resources and finally we get the product. So, we have to take a call, here you can see that 'what has to be produced' and how much has to be produced these two will send an input here and that input will be then transformed into the output. That the number is very important because once you have that number your transformation all the other decisions will depend on that we will cover that when we will come to our session on sales forecasting .

We will try to understand that once we have a forecast ready with us, once we know the forecast we know as, I have taken an example that 400 cars have to be produced in the next week that is the forecast that forecast is available then how that forecast is going to affect our decisions.

Decisions related to material, decision related to men, decisions related to infrastructure, decision related to the time or the schedule we will try to understand that in our course or in our week on sales forecasting or during our discussion on sales forecasting. So, the input the demand input information data that is given here. You can say, will come from the sales forecasting and once we have that data, it will be an input into the system and it will guide the system in such a way that the demand is met when the product is required in the market.

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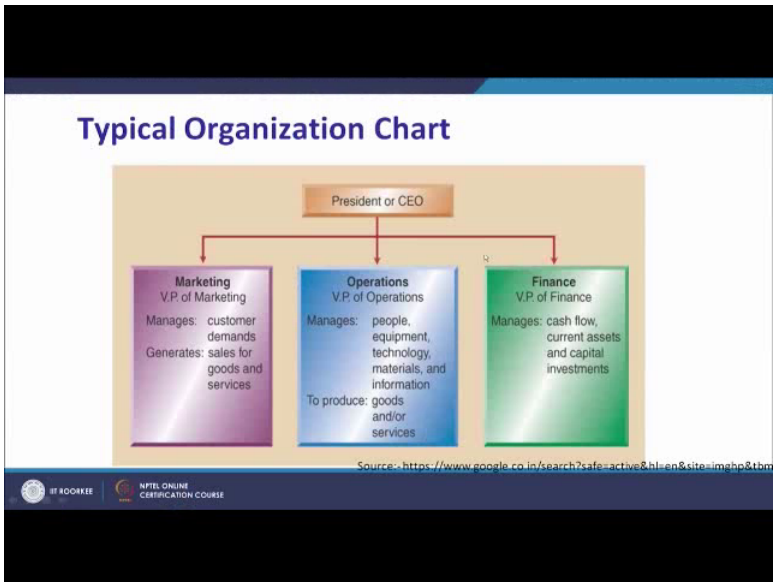

Now, the source is given here. This is typical organisational chart the president or the CEO. then, Marketing, Operations and Finance.

So, usually in any operations, company that is involved in operations, these 3 people are very important some marketing people the Operations persons and the Finance persons. Our you can say target here, will be we may not focus too much on marketing, we may not focus too much on finance, but definitely we will focus on operations and you can see is the vice president of a operations will manage the people, equipment, technology materials and information why in order to produce goods and or services.

So, this is the you can say vertical or the function that we are targeting. We are targeting this course towards the operations managers or the vice president of operations that what is their job profile. You start you enter the organisation and then you climb up the ladder and finally, you can at times become a CEO of a company, but before that may be, you may be in any of the 3 verticals you can be from finance you can be from operations, you can be from marketing this is a typical age old organization structure used in industries.

Now, Operation Management basic concepts, we need quality goods, goods and services that are reliable and perform correctly efficiency the amount of input to produce a given output responsiveness to customer actions taken to respond to the customer's need.

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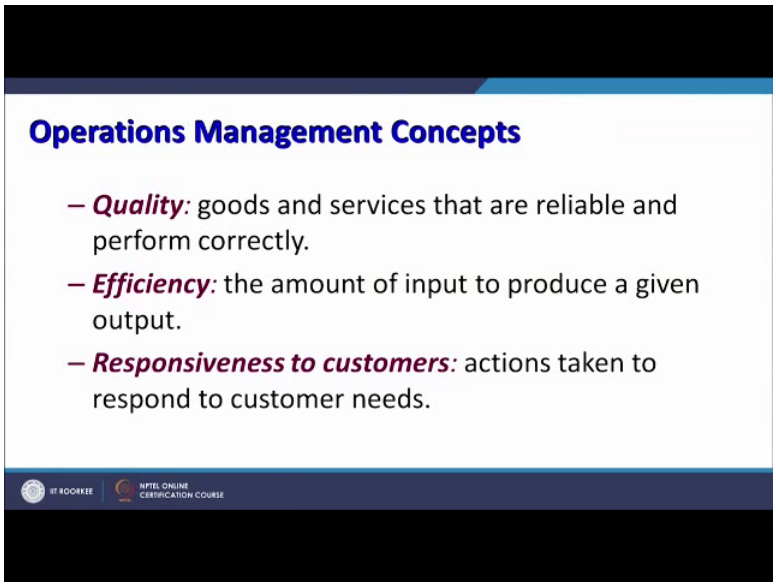

This we will cover in our session on product design and development that is responsiveness to customers. Now what can be we have tried to look at different books and different websites and we have tried to look at notes from different renowned scholars and authors.

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So, basically as per our understanding objectives of Operations Management can be to produce the right quality, in right quantity at the pre-determined time and with the pre-established cost. So, we need to produce we need to do the transformation we need to

convert the raw materials into the final product with these objectives that we produce the right quality in right quantity at pre-determined time and pre-established cost.

So, four things we have to be very sure of that, is quality, quantity time and cost. So, anytime be if a question is asked that what are the important parameters that you take care of? What is the criteria of defining that how you are producing? We can say that if quality is good, quantity is met, time we are doing it in a fair amount of time and the cost is logical, we can say we are producing well or we are managing our operations in the best possible manner.

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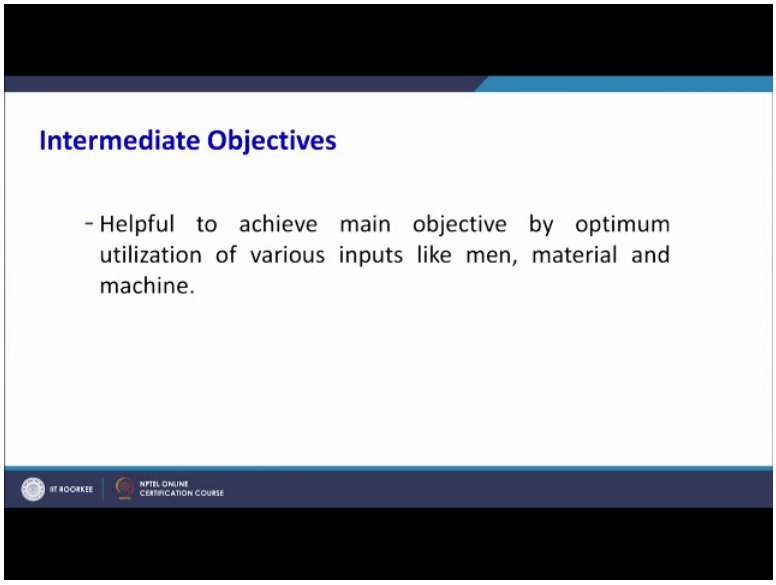

Then, there are intermediate objectives also they are helpful to achieve the main objectives. Main objectives are given in the previous slide that is quality, quantity, time and cost.

So, intermediate objectives are helpful to achieve the main objectives by optimum utilisation of various inputs like men, material and machine. So, stated in terms of this already machinery and equipment, materials manpower and supporting devices.

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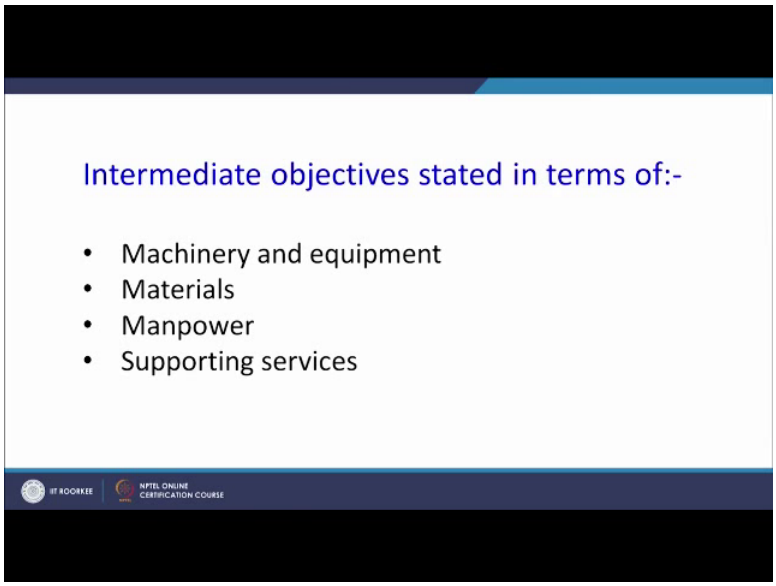

So, operations management decision strategic decision.

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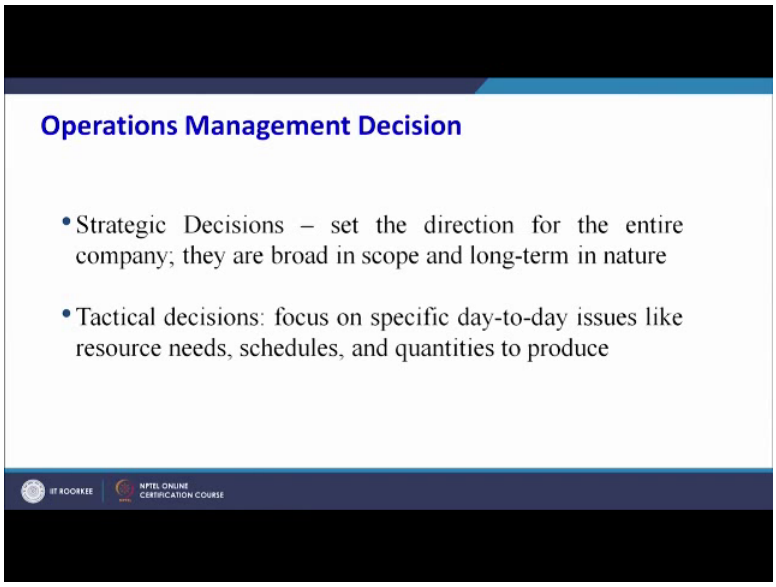

So, set the direction for the entire company, they are broad in scope and long term in nature tactical decisions focus on specific day-today issues like resources needed schedules and quantities to produce.

So, basically you can see that in operations management two levels of decisions we have to take strategic or higher order decisions and tactical or middle or lower level decision usually 3 types of planning activities done in any organisation. We do strategic planning,

we do corporate planning and we do operational planning. So, from the we can say time span point of view, strategic planning is always done for long time, corporate planning for intermediate time and finally operational planning for may be 3 to 4 months duration only. So, in operations management point of view, we have to do both the strategic decisions or strategic planning which can be long term and tactical which can be short term planning.

So, this is the historical development I will leave this session here with this historical development. So, we can see that industrial revolution was there in late 70s.

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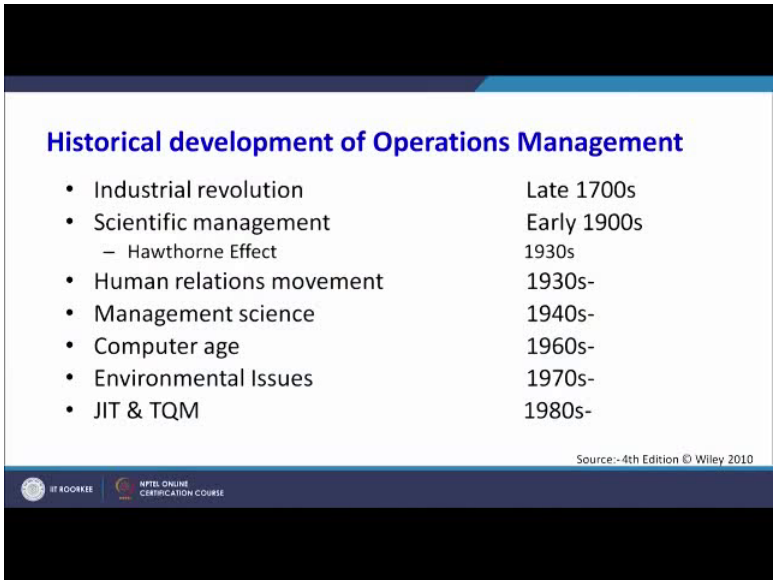

And then may be JIT and TQM ever developed in 1980's and finally, electronic commerce was the, we can say latest trend in 2000 and supply chain management research and activity started in somewhere in 90s, 1990s.

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So, lot of changes have taken place lot of developments have taken place, In how companies manage their operations. So, supply chain management is also one of the latest trends of how the companies manage their operations. We will have a session or two on supply chain management also during our course. We will touch this topic also. In one of one or the other weeks so, with this we come to the end of today's sessions. Today's session was an introductory session only on Operations Management and we will try to definitely cover or answer all questions like what to produce how much to produce when to produce and how to manage the materials how to do the planning all that we are going to understand in our course.

Thank you.