Toyota Production System
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Lecture - 24
Using Toyota Way for Other Organization (Services and Technical)

Welcome friends, so in our last many sessions, we discussed about various principles of Toyota production system. In those discussions, we focused mainly on the use of those principles for shop floor or production organizations but in between we also discussed that nowadays these principles are not limited only to shop floor rather they have much wider applicability.

And you can apply these principles in variety of situations. Organizations have become smart and therefore they have understood the value of becoming a lean organization. They have understood the value of 5S, they have understood the value of Kaizen and therefore these principles can be adopted, can be implemented successfully in different type of organizations and this particular session we will be discussing that how principles of Toyota manufacturing can be applied to other technical and service organizations.

And in this case, we will be having a kind of generic discussions that the basic philosophy of Toyota production system we have understood and now we will see that that philosophy is not limited only to shop floor rather it is applicable to any kind of organization though in the title we have mentioned service and technical.

But you take any organization, even if it is a religious organization, if it is a political party also even in that case, even if it is a university even in that also you will find the application of Toyota production system. So, with this idea we are starting this session and the title is using Toyota way for other organizations service and technical.

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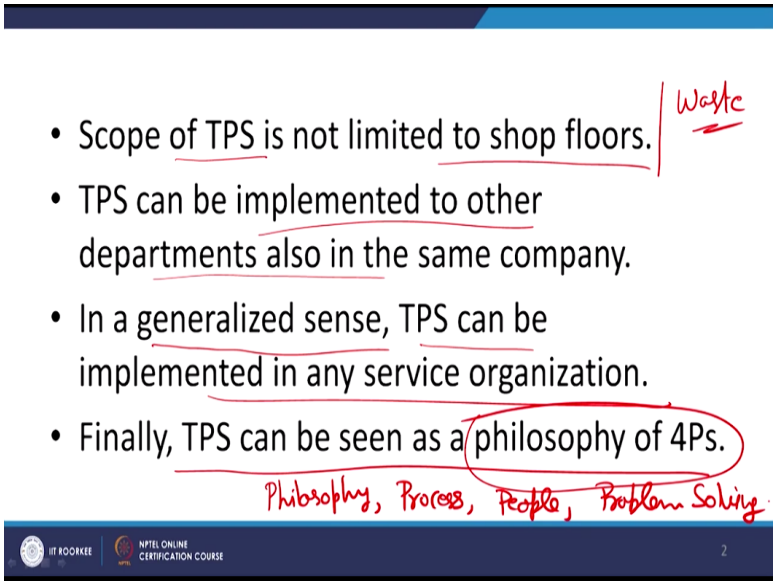

Now, as I am just saying, the scope of Toyota production system is not limited to shop floors. So, you can go beyond shop floors wherever waste is there and you are thinking that how to minimize the waste. The Toyota production system is the answer for that particular situation. So, waste is not limited to a production floor, waste is possible in a service organization, waste is possible in a religious organization, waste is possible in any kind of sports organization.

So, multiple type of organizations are there and in each organization waste is there. The importance is that whether you are able to see that waste or not see that waste. When we are part of that organization, we feel that all these things are very much essential and therefore we have that limited ability to identify the waste and when we have that limited optics.

Therefore, the problem is there that we may say that Toyota production system is only for the manufacturing or production activities, it is not having any kind of application in services but we will just see that how it can be applied to service organizations also. So, Toyota production system can be applied within other departments of the same company because you already have some success stories.

And by following that success story, it is much easier to implement that concept of Toyota production system in your design department, in your marketing department, in your HRM department so because you need not tell anything and you followed the concept of lean and you followed the concept of one piece flow, you followed the concept of Kaizen and that automatically created lot of success stories within the organization.

And therefore it is very much possible in those organizations that you can go to various other departments for the application of Toyota production system. Many a times, it happen that managers of other functional area they get excited that if production people can do it, why cannot we also do it and they automatically start asking that how top management can help them to implement the Toyota production system.

So, this case is relatively easier because you have something to show and that will act as a kind of success story for the implementation and if I talk in a generalized sense TPS can be implemented in any service organization. Any type of service organization is there, you can implement the concept of Toyota production system. So, you say that wherever we want to improve the competitiveness of the organization wherever we want to strengthen the process.

So, like in India there are lot of issues with respect to our Judiciary because judiciaries are always piled up with large number of cases. So, I think a very good case is possible that we can implement Toyota production system in our judiciary so that the faster delivery of justice can take place and that will be a great service to the nation also that if someone can do this task that how Toyota production system helps in on-time delivery.

And if we understand that where is the waiting in judiciary, how to optimize the entire system so that you can deliver the justice to the affected parties well in time, so that will be a really a great service. So, that is totally different type of organization and I am saying that it is very much possible to implement TPS in those kinds of organizations also. On the other side, we have this Election Commission of India.

And they are interested with the responsibility of conducting elections for the largest democracy in the world even in that type of organization also TPS can be implemented. To some extent, they have implemented TPS with the help of technology but we have lot of issues with respect to their working etc and therefore TPS can make them the most competitive Election Commission across the globe that is my idea of implementing TPS in any kind of service organization.

And finally because Toyota production system has its roots at the shop floor, so we are always tempted to attach TPS with the production activities but it is not so .It is basically a

philosophy of 4P that philosophy of 4P means philosophy, the process, the people and problem solving. So, this is a combination that how to respect your people, how to respect your partners, you should we always looking towards the problem not running away from the problem, not hiding the problem.

Then, you need to strengthen your processes and need to have this believe that the right process is there then only you will have the right product. We discussed in the process of decision making that how in Toyota people emphasize on developing the alternative options also without alternative options your preferred solution has no meaning and even if your solution result some random success, nobody is going to appreciate rather people are more happy to get some low results.

But if that solution that output is a result of some well thought of process, so the focus is too much on the processes. If you have the appropriate process, automatically the result will be a better one and then you need to have a long-term philosophy that we need to work for long-term philosophy at the cost of any short term advantage but just now if you remember in our last session we discussed the concept of learning organization where organization continuously need to improve and we discussed the concept of Kaizen.

With the help of 5S, we can improve our organization, we can make our organization a learning organization and in that also we discussed a thing that Kaizen helps us in getting some immediate results. So, on one side we are talking of a long-term vision, the foundation is long-term vision but when you are going with that foundation at the top you will see that many immediate gains are also possible.

When you are going into the right direction, so it will also give you many immediate gains so that the morale of people is always there. If for the short-term you continuously feel that it becomes a challenge for the top management to keep the morale of team high that whether we are going into the right direction or not into the right direction. So, if you follow the approach of 5 why's, continuously asking questions and then you follow the principles of 5S for Kaizen.

So, these things help us in solving our immediate problems. We have discussed that example that there is oil at the shop floor and by asking regular why's we went to the root cause of the

problem and because of the root cause of the problem, we addressed that problem and we could also solve the problem not only of that oil leakage but many other areas because now the focus is not on cost reduction, focus is on getting a good quality spare.

And this will automatically show us some benefit in the short-term and therefore the philosophy, your process, people will if they are properly synchronized, so even in the long run as well as at the short-term, you will have a positive answer, you will have something to cheer up and that is where I say that Toyota production system is a philosophy and if you understand that philosophy it is much beyond tools and techniques.

Now, when we are talking of implementation of Toyota production system in any kind of organization, so based on different type of people which are there in the organization, you can classify them into 3 categories.

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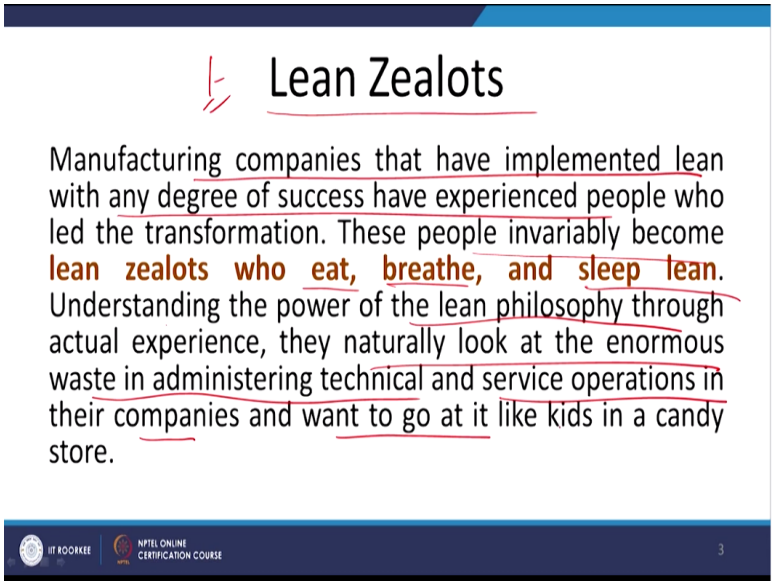

The first category is these lean zealots. Now, these lean zealots are those people who have already implemented lean in manufacturing companies and they have achieved some success, the degree of success may vary and they are the experience people in implementing Toyota production system and one very interesting thing is there with respect to Toyota production system and this lean manufacturing.

That it is not limited to your work place, when you are becoming a true lean professional in that case you actually your personal life also starts getting affected by this Toyota production system. At your personal life also, you start implementing the concept of lean, so it is not

something which is only for the organization, you start getting benefit of lean in your personal life also.

At your home also, you see that how sorting is done, how cleanliness is maintained in your kitchen, in your bathrooms, in your bedroom, in your study room. Everywhere you will see that whether things are as per 5S or not as per 5S. So, it is a philosophy which at the personal level also affects too much and these are those people those who got affected at the personal level also because these people they are eating lean, breathing lean, sleeping lean.

So, it has become the part of their life and they are always very much excited whenever there is any possibility to implement lean because now it has become the way of their life. So, they know that what is the power of lean philosophy and they naturally look at the enormous waste in administrating technical and service operations in their companies and want to go at it like any child is always curious to do something on which he feels enjoyment.

So, in implementing lean, they feel very much excited. It is they look for opportunity and because they are already experienced people, so they understand that how much waste we are creating in our organization, in administration, in other service part which can be minimized by following the principles of Toyota production system. So, they are the first kind of people.

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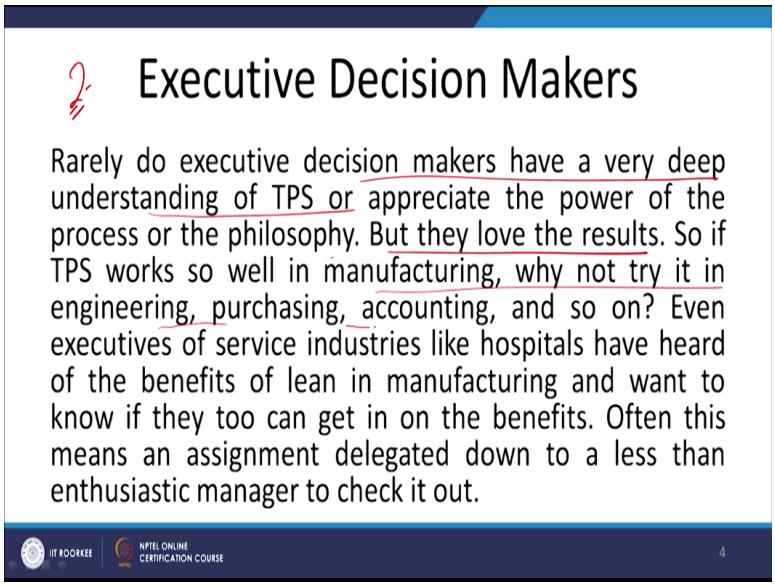

The second kind of people are executive decision makers. Now, executive decision makers, they have positive intentions. They know that Toyota production system is a good system which help us in improving the competitiveness but they on their own do not know this

Toyota production system to its core philosophy. So, they have deep understanding means not there but they have because they are not involved directly into the TPS processes.

So, therefore they do not have that much of deep knowledge as we discussed but they actually have the appreciation. So, they love the results, so if they feel that if TPS can work for my manufacturing department, if can work for my other departments, obviously it can have some kind of positive result for my department also. So, therefore they are looking to try for various other functional areas in the organization.

And they actually welcome people from shop floor to these other functional areas for the implementation of TPS and they are actually the decision makers at the top of the company those who decide that in which direction company should go. So, they actually facilitate the working of lean in the organization.

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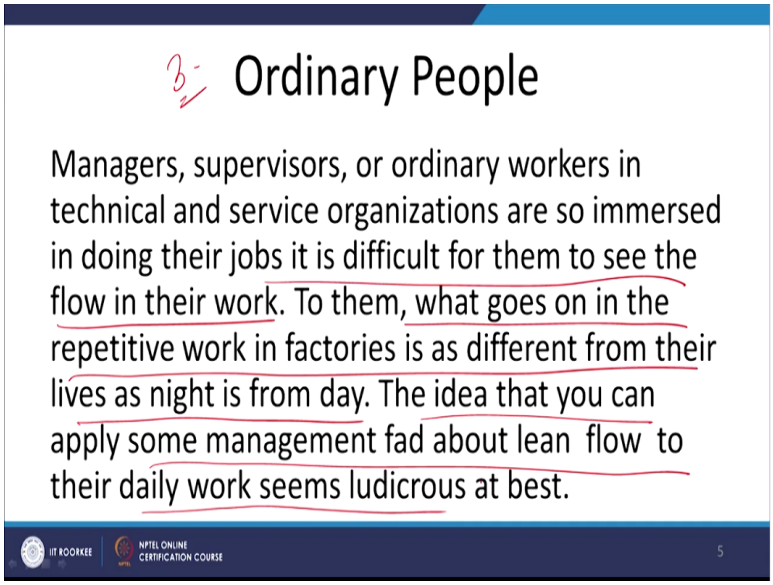

Then, the third type of people are known as ordinary people. They are you can say manager, supervisors or ordinary workers in technical and service organizations and since they are so much involved in their routine work because they are doing continuously the same repetitive type of work and they do not have any time, they do not have any outside ear or eyes to see things beyond their place of workstation.

So, they are known as ordinary people and for them it is difficult to see flow in their work means they are so much concentrated at their place of work that how the flow is happening, they are not able to visualize whether there is any kind of inventory, there is any kind of

starvation at workstations, so they are hardly bother about that. So, to them what goes on in the repetitive work in factories is as different from their lives as night is from day.

So, they are very much indifferent for that purpose. The idea that you can apply some management fed about lean flow to their daily work seems you can say stupid for them because of no appreciation at that level, they find it of no use and they feel because already we are continuously working, we are all the time busy in doing our work, so how it is going to help our organization.

So, if you ask them, they will have you can say that first two category of people they are very much positive. The first is extremely positive to have some kind of appreciation and they are willing to adopt lean practices and third they are having you can say totally indifferent view and you can say in a slightly more typical language that they are having kind of resistance for application of TPS in other functional areas.

So, these are the 3 characteristics of people in organization. Now, if you see this diagram, you will have an understanding that how TPS flow is related in service organization.

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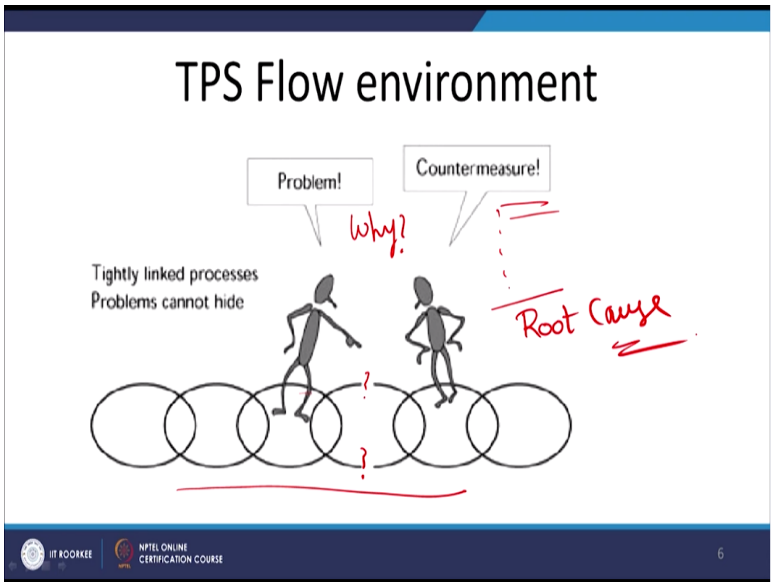

So, when you have this kind of tightly linked processes, so if some kind of problem is coming here, it cannot be hide; it will automatically surface out because if anywhere there is a problem therefore immediately this flow will stop and because of stoppage of flow, the problem will surface out.

So the idea of TPS is to create this strong linkages from one stage to another stage and when in a service organization that linkage is established, you will immediately surface out the problem, look for the countermeasures and by asking the series of why's you will have series of countermeasures, you will go to the root cause and that will help you in improving the organization. So, that is what is possible when we develop a TPS flow environment in any kind of service organization.

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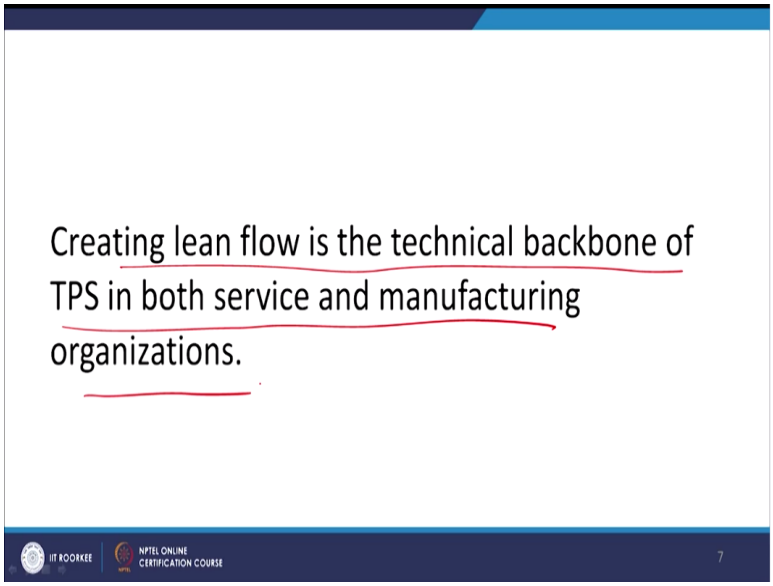

So, what is ultimately creating lean flow is the technical backbone of TPS in both service and manufacturing organization. So, if I say that what we means visualization whether your organization has TPS or not TPS. So, many a times, you are doing some good thing but you are not able to give some kind of name to your good things, so if the company is having a lean flow whether it is a service company or a manufacturing company.

So, based on that lean flow, I can say that TPS is implemented here. So, sometimes we do an exercise when we have taken a rational decision but many a times even without taking some kind of consensus decision, we do some good things and because of those good things if it is resulting into a lean flow that is actually the implementation of TPS in your organization.

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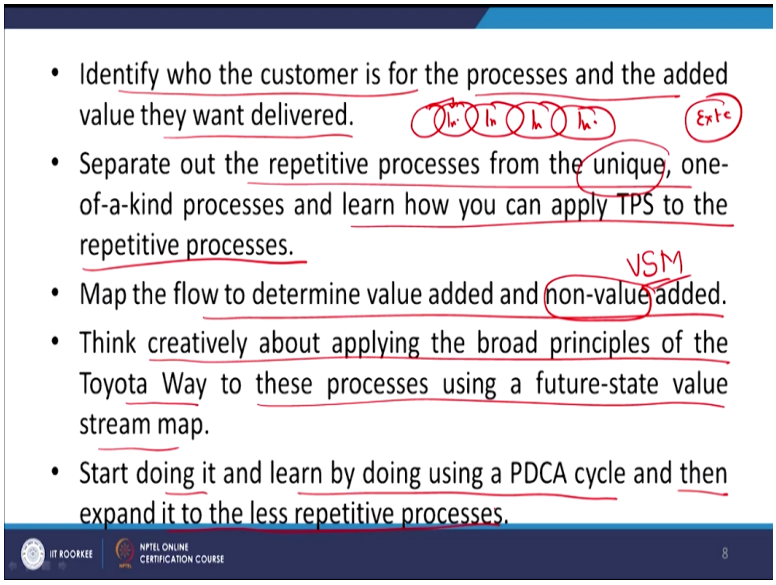

Now, with respect to implementation of TPS in your organization, we need to see that what we are doing and identify who the customer is for the processes and added value they want to be delivered. So, in any kind of service organization because the next stage in our shop floor also, we have discussed this particular thing that there are internal customers and external customers.

So, this may be the external customer and there are various internal customers. Now, who is your customer? So, the stage, next successive stage in your value adding system is your customer and what type of value that customer is expecting, that is the first important step in this process of application of Toyota production system to any organization. Now, separate out the repetitive processes from the unique sometime because customization is increasing.

So, for that purpose you are doing some kind of modular activities which are repetitive in nature and then for final delivery of product, final delivery of service to the customer, you may do some kind of unique activities, one-of-a-kind process which is only for a particular customer and learn how you can apply TPS to the repetitive processes. So, at least if you are able to differentiate, you are able to create two pools of activities, one pool of activity which are standard activities.

Repetitive activities are standard activities, for any kind of customer all these things are to be done but there may be some things which are only for a particular customer if customer requires that particular type of customization. So, it is very easy to apply TPS in those

repetitive activities. Now, map the flow to determine value added and non-value added activities.

So, we need to do this value stream mapping VSM and with the help of VSM you can identify that what are value added and non-value added activities. Then, you have to think creatively about applying the broad principles of the Toyota Way to these processes using a future state value stream map because we need to minimize these non-value added activities.

So, what should be the creative value added future map that you have to prepare and then you need to identify ways and means to implement that future value stream map, that is the next step and then start doing it, learn by doing using PDCA cycle and then expand it to the less repetitive process. So, when I am applying Toyota production system in my service organization, so the important thing is that we need to because services are customized things.

You have high degree of customization in this service but even in that high degree of customization, there are something which is common for all the customers and there are few things which are not common. You are going to a restaurant, in restaurant customers are giving orders for their chapatis. Now, some customer may expect a very you can say different type of chapati cooking and some customer may require a different kind of chapati cooking.

Now with respect to basics of making of chapati, there are few things which are you can say repetitive that you have to create a proper base and then you have to keep that base for some time so that it becomes easy to make chapati out of that and that is a kind of repetitive process and once final baking of chapati is to be done that is a customized activity depending upon the need of a particular type of customer.

So, when we are applying TPS in a service organization, so first we need to see that apply TPS in the repetitive activities and slowly and slowly we can go to application of TPS into the non-repetitive activities also. So, that is how in a service organization, TPS is implemented. Now, when we are talking applying of Toyota production system in a service organization so as in the shop floor we discuss different types of waste. So, similarly those wastes are there in these service organizations also.

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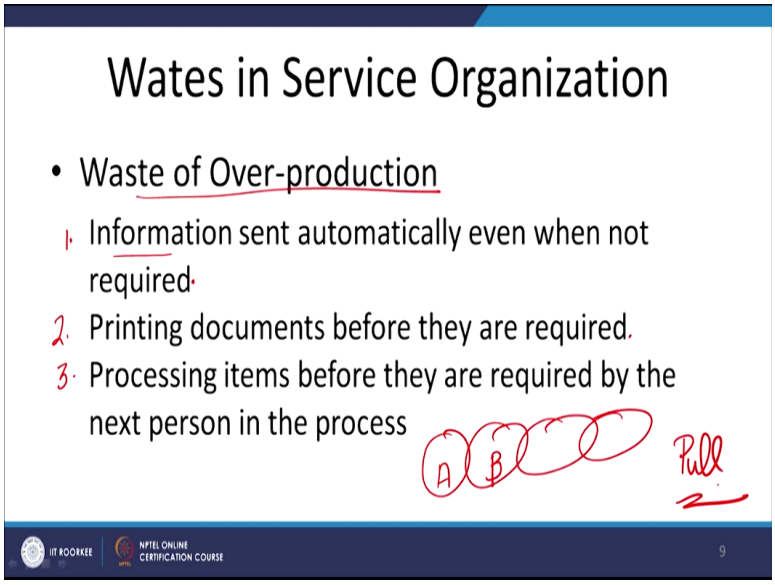

So, if we see those wastes quickly, the one type of waste is over-production that we know from our knowledge of waste in original Toyota production system discussions. Now, how these types of waste are there in service organization. In our production organization, we have seen that these are creating large inventories. Now, over-production is like one type of example is information sent automatically even when not required.

So, because nowadays you have so many sensors all around us, so many point of developing information data and if too much of information is being sent to your top management, it is like creating unnecessary information and that is a type of waste which is very common waste now happening because many information is coming to us which is not of any use to me, then another type of waste is printing documents before they are required.

And you are printing documents, some type of reports, etc in anticipation for preparing a meeting but actually that type of document may not be required. So, it is a very common type of waste which happens in organizations. Then, processing items before they are required by the next person in the process. So as I said that we have a series of people looking for processing of information.

So, before this person requires this is B, this is A, so before B requires a particular type of information A keeps that information readily available, so that is also a type of over production from A's point of view. So, because in our Toyota production system, we believe in pull. So, when we are believing in pull, so anything done as per push philosophy that is creating a kind of waste. So, that is waste of over-production.

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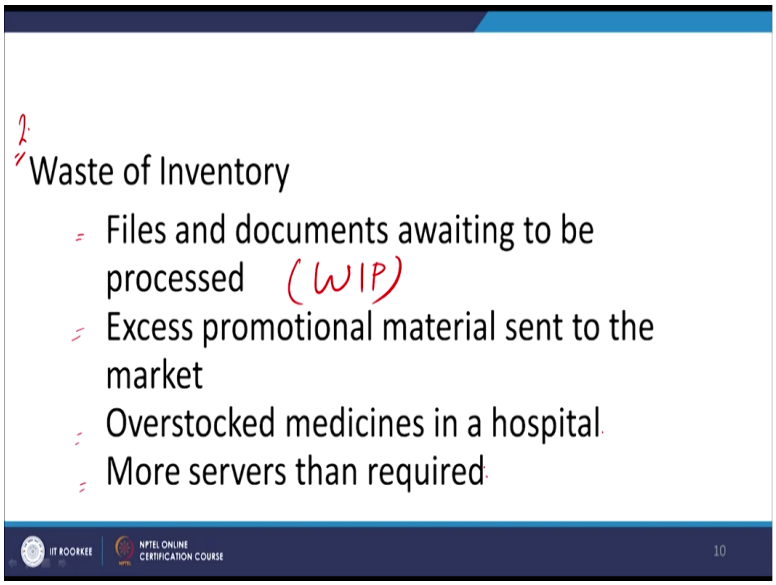

The second type of waste is waste of inventory which is very common and this waste of inventory is because of waste of overproduction. Now, let us see some examples in the service organization. Files and documents are waiting to be processed because you have over produced information; you have not understood the requirement of the next stage, so when you are producing large quantities of information, large quantities of files, documents, etc for processing at the next stage and that is creating WIP work in process inventory.

Because that is not required right now but the documents are available. Excess promotional material sent to the market, that is also a type of waste. It happens like you send lot of flyers, posters, the flex printers and these are not used, so without having a proper estimate that how much material is required, you are sending everything in excess and that is lying unused at the market retailers, wholesalers so that is also a type of waste of inventory.

Then, overstocked medicines in a hospital that is also a waste, then some of those medicines get expired because you do not have that much of demand so this is taking the space also, taking your money also and it will also create issues with respect to 5S. Then, more servers than required that is also a type of waste. That much data is not there in your organization but just to remain ahead, you are keeping servers of very high capacity and because that much data is not there, so that is also a type of waste.

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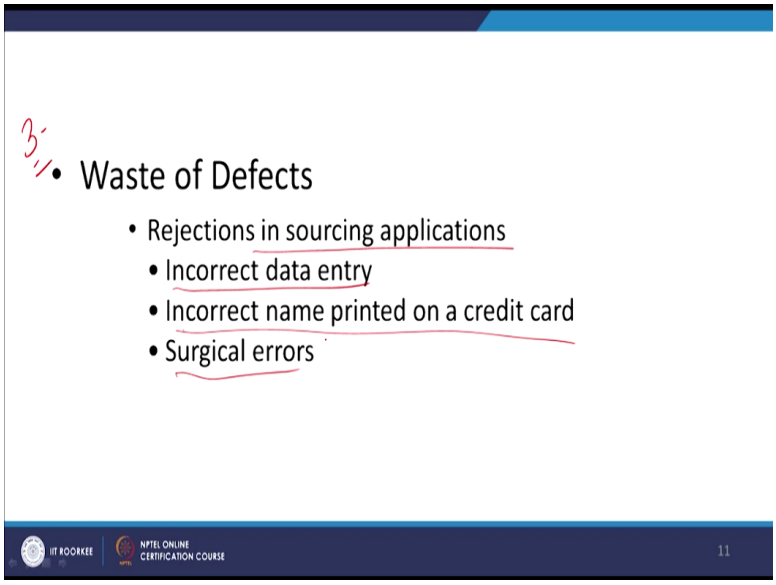

Then, another type of waste is waste of defects. So, waste of defect is also happening in service organizations. We understand waste of defect in case of a production organization. Now, how it is happening, that rejections in sourcing applications that from where to get the raw material, if that type of applications are there, then you have applications for let us say a Ph.D position in your organization and lot of applications are being rejected.

So, that is also a type of waste because of unfilled data because of lack of supporting documents that is defective applications are there and because of defective applications these kind of waste is generated. So, that is a very common type of waste which happens in the organizations. Incorrect data entry that is also a common thing which is possible, incorrect name printed on a credit card we all see and like you can say surgical errors.

This is a very catastrophic defect but that happens, so these are some of the examples of defect related waste and all these are very common, you all may be knowing it.

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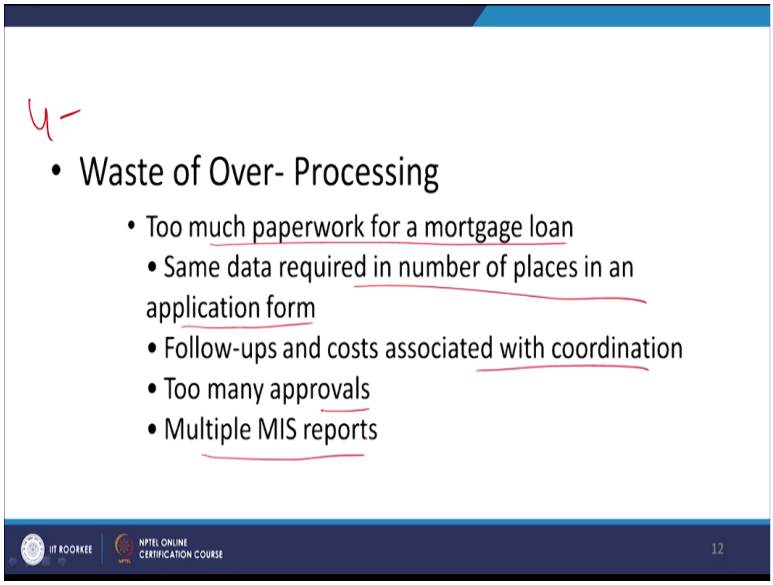

Then, another type of waste is waste of over-processing. So, as that much processing is not required but you are doing over-processing of your services, your offerings, so like some examples are there. Too much paperwork for mortgage loan, so when you are going for mortgage loan, so many formalities are there, paper formalities so that is over-processing.

That is a very common thing, you go to a bank and large number of documents printed in a very small font, you have to sign, you do not have even time to read all those documents and it is to be signed but nobody know how to use those documents so that is like over-processing example. Same data required in number of places in an application form. So like your title of Ph.D thesis, so that may be required 2, 3 places in the application form.

There are some annexures available and everywhere you need to write your date of birth so that type of over-processing of information is happening. Follow-ups and cost associated with coordination, too many approvals are required for some activity, multiple MIS reports, management information systems reports. So, all these are examples of over-processing. So, we do lot of over-processing that takes lot of time, energy, money, everything. So, that is creating lot of waste.

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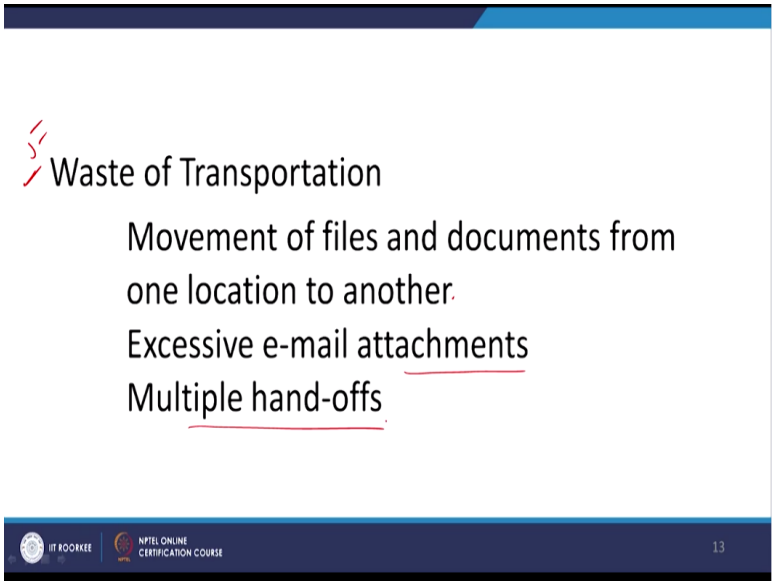

Then, the fifth type of waste is waste of transportation. So, movement of files, documents from one location to another location that happening in some of the cases in India also, some state governments have two capitals and when state government has two capitals, so lot of movement of files and all these documents happen from one capital to another capital because in summer we have a different capital, in winter we have a different capital.

So, without doing any kind of value addition, you are simply creating lot of waste. So, that is simple example that how waste of transportation is taking place. Excessive e-mail attachments, now people say that do not give too many e-mail attachments rather you just paste the link for all those attachments and we can automatically see. So, this can minimize the load of e-mail.

So, this is part of e-mail etiquettes but just to share that we create this kind of waste. Multiple hand-offs, so that is also, if a thing is passing from multiple hands that also creates a lot of waste of transportation.

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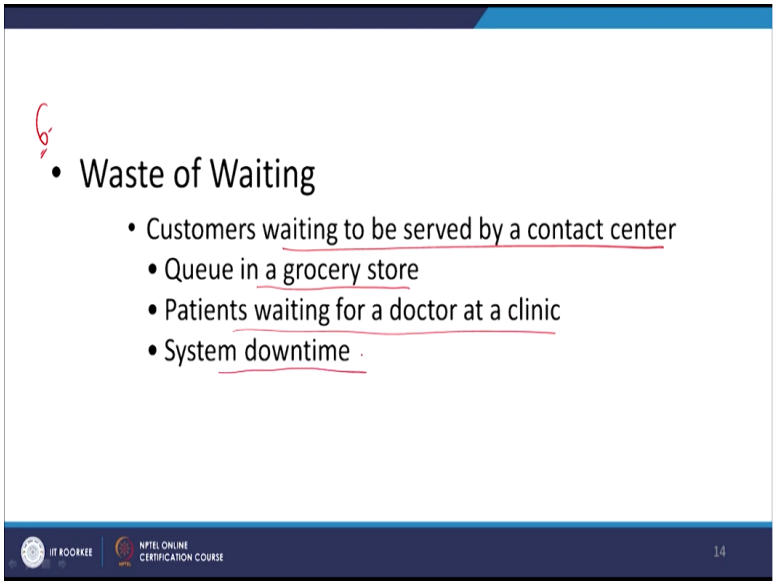

Then, another waste is waste of waiting, very common type of waste of waiting and in services it is in fact more common and you can actually feel that how waste of waiting is there. Customers waiting to be served by a contact centre. So, that is something very common, queue in a grocery store, patients waiting for a doctor at a clinic, system down time, so there are many things for which we keep waiting.

And therefore, if you are waiting, so you are creating lot of waste of time and that has to be minimized again.

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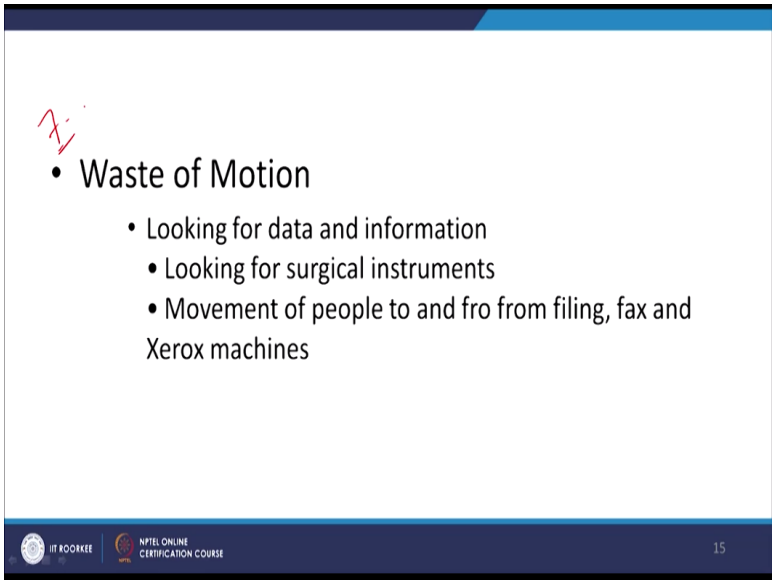

Then, waste of motion is there; the waste of motion because you are looking for data for information, so for the data and information, you are moving here and there, so that is creating a lot of motion that is waste of motion. Looking for surgical instruments, if you are

not following 5S, so you need to move from one place to another place in your room in your operation theatre, so that creates waste of motion.

Movement of people to and fro from filing fax and xerox machines that also creates a lot of waste. So, we have seen the development of time and motion yesterday where they discussed that how to minimize these kind of motions which are non-value adding motions and then you can work for longer duration without fatigue. So, it actually increases your efficiency if you can minimize unnecessary motions.

And at the same time, it is also important to understand that there is a difference between motion and transportation.

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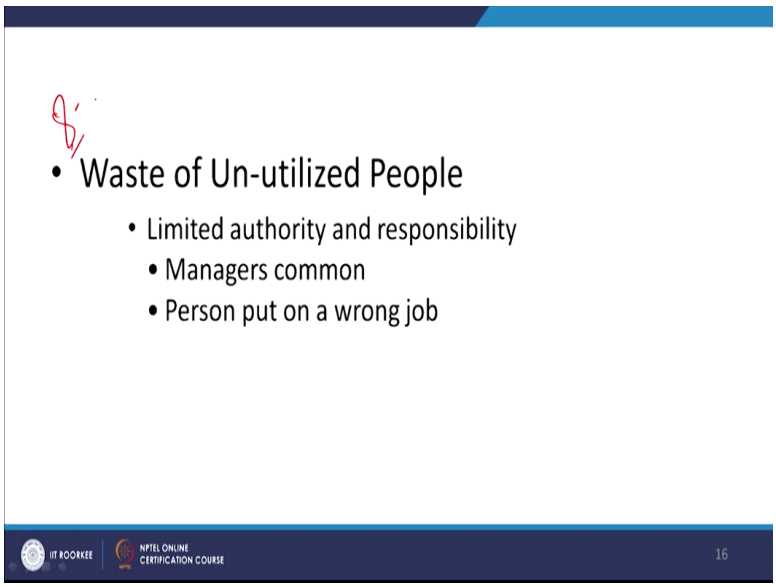

Then, another waste is waste of un-utilized people. So, human resource, their creativity that is also a very important asset for the organization. Many a times, organizations are not able to take the advantage of the creative power of their employees. So, that is also a type of waste we understand like when your employees have limited authority and responsibility, so because you are the decision maker and therefore you are creating that waste of unused potential of your employees.

Managers are common, then everywhere I am the manager, so I am responsible for everything, so that type of things are also there. So, that also creates lot of un-utilized potential. Then, another very common thing you will see everywhere in our context that the right person is not at the right job, wrong person is at a job. So, therefore if you are not doing

the right kind of thing for your potential, then how will you create a good organization, how will you create a good output?

So, the matching of people to the job is also creating lot of waste and you are not able to use their potential up to the mark. So, we saw that how different types of wastes are also applicable in the service organizations and if we apply Toyota production system, so the examples are different but the objective is to minimize these kind of wastes with the help of application of Toyota production system.

So, with this we come to end of this session and we discussed that how TPS is a more philosophy than simply than just simply tools and technique and therefore can be applied in any kind of organization. Thank you very much.