Logistics & Supply Chain Management

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Lecture 11 : Tools for Improving Logistics Efficiency (Contd.)

welcome back to this NPTEL online course on Logistics and Supply Chain Management. I am Dr. Vikas Thakur from IIT, Kharagpur. So, in the last session we were discussing about the tools for improving the logistics efficiency and in that we discussed the very first tool is plan, do, check, act cycle given by Professor Edwards Deming and now we will continue with the 7 QC tools in this session. And we will discuss about the quality circle, 5S approach and benchmarking, how these concepts can be used to improve the overall logistics performance.

So, these are the 7 quality tools given by Professor K Ishikawa and you can see we have the cause effect diagram, then we can use flow chart, we can use check sheets, then Pareto charts, histograms, control charts and scatter diagram. So, this is the complete set of tools which can be used just starting with the diagnosing the problem and reaching to the end solution how we can implement that solution and that problem can be solved. Even you can track the performance as well after implementing that solution you can track the performance. So, these 7 QC tools will just go through how these can be used in a sequence so that we can analyze our complete problem.

So, very first is flow chart right. In the last session as I talked about a control process where we talked about some process and then we saw that this process is giving some output we are processing and then this output is being compared with some standards and if any deviation is there. yes so then we are taking the corrective and preventive action and again going with the change in process change in raw material change in output or technology if it is no we will continue with the same process this is again a kind of flow chart i am just giving you all the steps right so this is a kind of decision making stage i can highlight this decision making like this if any process i am doing i can highlight like this if this is the start this is how it is highlighted the end is highlighted like this right so means different shapes we are using just to represent different stages in that flow chart. Now, why flow chart is used? Just to you know have the quick understanding of the any process, how it is happening. So, it will give you the better clarity visibility instead of reading writing the long paragraphs right so this is one example you can see here on your screen how the manufacturing company of electronic gadgets they are doing with

assembly is starting here so step one component they are checking second stage may be assembly line is there there are so many different stages they are doing assembly on those stages, then decision point is whether quality check is needed or it is error free or 100 percent inspection or may be the quality inspection is not required.

If it is required, we will go for check sheet, we will do the sampling, we will pick some samples out of the product and then we will check whether any defect is identified. If it is identified, then again we need to we need to go for the assembly we need to check the component whether component is faulty or there is something wrong with the assembly line right so if nothing is required test is required we will continue with the final product and then final product testing happens so then again there is decision point whether this final is ok or not then final assembly is happening production is complete and this is the complete end so see in the flow chart how easily you can understand how the things are flowing in the in the logistics network also we need we have discussed this complete flow chart right from your first supplier how things are moving through your transportation network reaching to your manufacturing facility then again through all the long chain of your stock carry forward agent, wholesalers, distributors, retailers, reaching to the end customer. So, that also flow chart, you can just draw the flow chart. Now, what inferences we can make out of that? So, this is reveals bottlenecks and inefficiency. So, flow chart will help you to identify where is the problem.

So, how bottlenecks you can identify, I will give you very small example. Let us say I have designed these five stages in the assembly. So, product is entering here leaving here this is finished good is leaving here raw material is entering here may be on different stages we are using some more components on that stage right. So, then in terms of that raw material will can enter any stage new raw material obviously, sub assembly will move through this conveyor belt. Now, let us say for processing this stage we are taking 5 seconds, for this 6 seconds, 4 seconds, then may be 8 seconds and then may be you are taking again 6 seconds.

This is how you have designed. Now, through this flow chart you can easily identify that this can be your bottleneck because it is taking 8 seconds almost double of the last stage this also taking 6 seconds again 2 seconds more than that so if I will take this stage only between this and this person will process two products at that time but this will pass only one product so that means in the end only 50% semi finished products he is able to pass who is sitting on this fourth number stage and rest 50% will be the pending you can say pending stock elect is there on his stage so that means this is the bottleneck and restricting your efficiency how we can do improve that we can we need to think whether we can go for parallel stage the person is also sitting there so that half of the fifty percent

of the product he will process fifty percent of the product he will process right and if dedicated two workstations are not required maybe temporarily we can assign the other workstation and then we can go so this is how the process flowchart will help you to streamline the things throughout your distribution network throughout your packaging if some big packets are taking time small packets or delicate items are taking time and then because you are shipping all the products related to one pin code and then all those different types of products are there So, how you can be more efficient saving time right. So, this will help you to understand that and then you can obviously, the process which is taking longer you can make decision on that. So, more informed decision will be there. So, action taken you can reduce the bottlenecks, you can optimize time consuming process right and then additional training is provided to the line worker to be more efficient may be we will stretch these workers who are taking 5 or 6 seconds to be more efficient may be in that way or may be we can change some technology also in that way so that the it can be comparable to somewhere 4 to 4.

5 seconds so that all the stages are uniformly designed so that there should not be any pending work on any stage right then it will help you to check the quality also because let us say on this stage particular two stage very critical stage and most of the complaints let us say like we talked about the packaging related complaints are coming from this stage. So, then we need to increase the inspection here see the very this is misconception that quality means checking no quality we should target in such a way that quality should be seized after some time quality team should work towards that after some duration there should not be any requirement of the inspection right so we should build the quality in the design of the product we should build the quality in the design of the packaging we should build the quality in the process where we are doing the packaging where we are transporting where we are keeping in the warehouses why the inventory is outdated why it is expired in the warehouse why our system did not give the alarming ah situation that now only few days are left few weeks are left and you need to rotate the stock right so that indication our warehouse automatically should be it should be circulated to all the stakeholder so that that inventory can be consumed first in the market second point is the second tool is check sheets so usually check sheet you might have seen check sheets in day routine life if you are traveling through maybe train through air so after completing your journey they are sending you one kind of feedback form check sheet So, you can evaluate as per how the staff was dealing with you, the cleanliness, the services provided on the plane and then all those things right. So, that it will give them you know kind of direct touch that you are interacting with the customer and in that way you can somewhere you can also get a chance to improve your services right. So, check sheet is a kind of thing Dr. Ishikawa has given this concept of this is a way of collecting the data right.

So, through your check sheet you can collect the data where the faults are happening. Check sheet is also like we designed that most of the complaints are coming from packaging. So, you can see number of occurrences, if Monday we see bottle broken 2 right. cap loose Monday nothing Tuesday too in that way we can see missing label also we have. So, this is a kind of check sheet.

So, in the end we can analyze why this is happening. If on one stage consistently something is happening wrong order that means who is the operator? where is the location, date, section everything so that we can identify that problem where the problem is like we identified initially. Now, I have given you that image you can just relate with that example very basic example why we need to find out that the very basic root cause right. and damage while packaging how many times we did that and what are the reasons maybe in the weekend the defects are more maybe people are in rush to you know leave the workstation to go for their weekend plans and all that that can be one of the reason maybe monday more faults are coming complaints are coming because just they are coming after enjoying their weekend so it is little difficult to concentrate back on the workstation and all those things may be right so this is a way how you this is just one tool to collect the data so first your flow chart you can understand the complete process second this check sheet is required to just record the data where the faults are happening and what is the frequency of those faults right and simple one case is there you can just see a manufacturing company produces electronic components and they are tracking where the problem is so date of production you can find out when exactly that complaint happened type of defect is there any defect with the manufacturing process soldiering issue or may be component misaligned or may be damaged component faulty your packaging or may be faulty process so location of defect like i told you So, it was done in A shift B shift D shift or at which workstation workstation fifth or tenth or twelfth or which one is responsible. So, that we can increase the sampling or inspection rate at that particular stage or we can think of giving the training to that person who is working on that stage where those faults are occurring right.

we can find out the shift then operator we can find out specifically. So, that if special attention is required and if this is somewhere around the industry average we need not to bother much about that, but still we should go for the regular training then of all the staff obviously. if it is something out of the box things are happening and many faults are coming. So, then we need to identify the particular person so that we can go with the things with that particular person only. So, what actions we can take? We can identify the root cause of the defects and if it is happening somewhere in the manufacturing, in the loading of the truck, in unloading, in storing in the cold storage or while packaging the product.

then those stages you can define and specific quality check sheet you can prepare related to those right so then targeted training program like i told you if this is the problem with some particular operator you can do this is not only the only the person can be at fault let's say you have completely automated warehouse so robots are working so even then if it is the fault with the machine so sometimes that can also happen continuously working continuously machine is working wear and tear can happen so then you need to check for that also. So, results will be you can see the improvement in quality when you will be implementing the identified root cause. So, common type of defects you can find out. So, in that way you can build a sustainable environment of quality management through your logistics distribution. So, in the end this is one acknowledgement you will get from the end stakeholder of that distribution network if you are doing all the you are taking all the points in the check sheets.

Now, third tool is histogram. Now, we recorded the data. Now, histogram will give you the pictorial representation that this is fault 1, this is fault 2, this is fault 3. So, this is like what is the frequency of these faults 5, 10, 15, 20 like this quick view I can get. And, let us say you can compare month wise as well.

January we have 3 faults let us say for January month. So, let us say we have like this. So, fault 1, fault 2, fault 3, So, this 1, 2, 3 likewise you can continue. So, I can just see in any month this fault 2 is very high and next is fault 3. So, first I should prioritize fault 2, then I should pay attention to fault 3, then I should move to fault 1.

so this will give you quick indication where you should go so histogram will help you to in that way so this is one case restaurant chain they want to enhance the both food quality and customer satisfaction obviously then you need to talk about the delivery time how they can do that right So, they have collected some data and they have organized this data, how many times they are making the delivery between 10 to 15 minutes, how many times between 15 to 20 minutes, 20 to 25 minutes. So, these many times you are making the delivery. So, this is a quick review that you can analyze that you are taking the maximum time here and here. So, somewhere here normal distribution curve also you can draw on that. So, this will help you to understand where you need to fasten up the things, where you need to go for maybe half cook item you can keep with you.

So, that order if those kind of products are there which are in continuous supply and demand. So, then you can manage in that way and you can minimize the time right. So, your histogram will help you to understand that. So, real time performance monitoring

system can be implemented by tracking the delivery times. so once you will implement that you can see now the delivery peak if 25 to 30 minutes you can further reduce it if you are finding out the bottlenecks and you will be more consistent it will not be like this that sometimes you are here taking more time sometimes here so that you can be more consistent in that way right and when you are consistent so customer satisfaction see if one day i am providing services within five minutes and next day I am providing services in 25 minutes so see same customer is coming to you so obviously if I got first day 5 minutes services anywhere you are taking 25 minutes I will be highly dissatisfied right if on an average continuously consistently you are taking 15 to 20 minutes maybe whenever I am coming to your store I know that this person will take average this much time so mentally I am prepared that way right so that is also kind of thing that you know customer mind and psychology is very difficult so the same situation sometime customer may take as a positive sometimes may take as negative so again i told you as per month jan feb march you can analyze this there is another way these are the defects And, when these defects happen that also this is shift 1, shift 2, shift 3.

So, all the time you can see that reasonably shift 1 defects are very high and then shift 2 defects are also increasing. So, what are those defects? This is wrong color, does not light up when you turned on, did not turn on, too small or may be size is not fitting. So, put the wrong label on that or wrong size information. So, that way you can just find out, you can see how quickly you instead of going through the long tables and then information data, you can just get the picture in no time. Now, you collected information what is the frequency of occurring those faults.

Now, I need to prioritize which one is the fault which is happening very frequently and this is Pareto principle 80-20 rule which says that your 80 percent of the problems are because of 20 percent of the reasons and this is almost applicable. every phase everywhere of may be in your life as well you see majorly our life is affected by 20% of the decision your education which line you are into that will decide your total career business then whether you are going for your own venture or you are going to provide the services that is another decision second decision third who will be your life partner fourth after retirement what you will do four five decisions so that means these twenty percent decisions are affecting your and these are so big decisions if one goes wrong your whole life will be disturbed so that way 80% is their weightage right so same thing happens in almost every area if you talk about inventory i am keeping inventory for any product let us say car so twenty percent item will be there components will be there who are carrying the maximum you know price cost and rest eighty percent items are only contributing twenty percent so this is a b c analysis of inventory management we will do in further sessions right so pareto diagram will histogram is just we will arrange that these are the

faults like this they will we can arrange in Pareto chart and then we can see these 20 percent of those problems if these are the problems problem 1, problem 2, problem 3, problem 4, problem like this. So, these 20 percent of the problem which are 80 percent. customers are facing right so we can easily prioritize that now this tool is used to prioritize those issues whether the issues are mostly related with packaging or issues are mostly related with transportation issues are mostly related with the outdated inventory because of warehouse management or maybe the outdated inventory in the warehouse right So, you can just see scratched screen, battery issues and missing components. So, if I will just combine these three.

So, you can see how much part these three are giving you somewhere here 80 percent. So, only these issues and if you will solve these 20 percent issues, your 80 percent problem will be solved. So, Pareto chart is a very very beautiful tool to analyze the situation in that way right. So, others so many may be there. So, even if you will try to address even then you cannot because obviously, any process cannot be 100% error free so in that way you should focus first on those 20% which can be you know addressed so scratch screen or battery issues are very prominent so immediately you can where that scratches are happening maybe in the storage or maybe when you are packaging the screens where that or maybe when you are finally you are cleaning that or maybe when you are your engineer is installing at the site location right then scratches are aware the scratches are happening.

So, you need to find out the reasons again you need to do the root cause analysis and the next tool will be root cause analysis only right we will see how we will find out the root cause. So, once it is done we can fix these issues and you can reduce your defects by 80 percent just focusing on 20 percent of the problems and in terms of that you can improve the customer feedback and returns will be minimized obviously right. So, this is how it will work. Now, this is the fifth tool which we will use to find out the root cause like this is decreased customer satisfaction and may be this is happening because of the scratches are happening on the screen during packaging. Now, what can be the reasons? Let us forget this.

This is fish bone diagram given by professor Ishikawa and this is head of the fish and these are different branches you can just see like a fish it is this diagram is there. So, why like the first example if I will go to that very basic example that problem is with packaging. this is the problem. Now, we identified this problem can be because of the manpower working on the workstation, because of the technology we are using on that workstation, because of the equipment we are using to packet that, because of the working conditions are not good. because of the fault in the raw material because of so

many other issues like so these issues we will list now if the problem is mostly happening because of manpower we will ask again why manpower problem is there may be did not undergo the proper training may be not happy with the work environment may be disturbed with personal life may be not the right skills at that job may be related to salary may be related to health issues so many things can be there this related to manpower only so we identified the first reason then sub stages will find out the next stage reason then training if he is not trained properly why that person is placed at that situation again we will find out the reasons who can be at fault so HR team has fault may be the placement team at fault may be the induction people who did induction for that may be at fault So, if it is the problem of HR, how we can, why that happened? So, HR need to change the policy.

So, this is Fishbone diagram where we will try to find out the reasons on the further stages. So, that we can find out the main problem and this is also known as cause effect diagram. So, once you will identify the problem, major categories under people, problem with the process or equipment like I discussed or environment is not right, then you can find out the subcategories also. And then you need to do the brainstorming session, you need to ask by we usually call it 5Y analysis. or 3y analysis or 7y analysis means we will ask why this happened 7 times.

First we will find out the answer then why that happened, second we will find out the answer then why that thing happened. So, we will keep on asking the why's until we are reaching at the root cause. So, the potential causes we can identify with the help of this fish 1 diagram and then we need to take the corrective action, additional staff, we need to optimize the work flow or we need special training. So, obviously, when we will find out the root cause. employee will feel motivated he will feel connected to the organization and then in that way the overall performance complaints will reduce performance will increase and in that way customer satisfaction which was the initial problem can be increased and in which will result in the ultimate customer loyalty right so this is how fishbone diagram can help us scatter diagram again now maybe we identified three solutions to one problem that first i need to revise the compensation of that person then i need to provide him health insurance kind of thing i need to provide him the maybe the other housing facilities or maybe the education facility to the children maybe i need to enrich his job or enlarge his job whatever these are the three solutions you suggested to your management right now i want to track whether if i increase the compensation from point a to point b what is the performance whether the performance has increased like this, like this, like this or still the performance is like this right.

So, if it is how I can find out with the help of scatter diagram. So, let us go if the

problem is like this, this is the solution let us say this is the solution I am implementing and this is the result. I am increasing the compensation here and I am looking for the result in terms of number of complaints. reduced number of complaints or you can say because this is positively increasing we cannot say in that way here we can say when there is negative correlation in this case we can say the result in terms of productivity. So, if I increase the compensation productivity is increased if I increase the compensation your number of complaints coming from the markets.

decreased so that means this component solution is working fantastically on that particular situation if the points are like staggered like this so that means there is no relationship even if you are increasing the compensation the employee is not motivated enough that he is somewhere performing above the average or whatever he was doing earlier. So, this is the scatter diagram. You can see number of training programs you did and job performance you can see still there is increasing trend. So, that means you can suggest that training programs will help you to increase the overall performance. So, you can just see x axis your independent variable, y axis your dependent variable and regular checks you can track and you can improve the overall performance.

The last tool is control chart. Now, control chart is that you are doing your process let us say at this mean, this is the middle line right. So, you are recording your process at this level and how your process is moving like this. So, you will define your upper limit as well, upper control limit and lower control limit as long as your process is within this range. So, you will say this is controlled. but if it go beyond this range we need to stop and we need to take the corrective action.

So, this is control chart statistically we are this tool was given by professor Shewart and here we are statistically controlling the quality. So, how many times we are breaking the packaging how many times product wrong product delivered right. So, if there are this is the average and because we are allowing some defects up to some level plus minus let us say to be very specific sometime we are saying 3 sigma right. So, upper control limit, lower control limit as long as you are within that range you are ok. So, when we will discuss about the manufacturing unit specifically, we will talk about how we are setting these plus minus 3 sigma for differentiating the assignable cause and common cause of variation.

so here only as long as we are within the set limits we are ok with the quality right so we need to find out whether the common cause of variation or special cause if it is common cause we cannot remove that common cause there will be small variation right so that we cannot that is sometimes because of environmental condition sometimes because human

intervention is there human it is not completely automated right even automation is there after some time may be wear and tear so we are not getting the exactly same parameters so parameters keep on changing so this we cannot remove but special cause if something the big problem is happening then we need to take the corrective action right so we need to identify whether the cause is special cause or common cause So, you can see once we will implement these control charts, we can reduce the variation in the quality of the products delivered. This is how all the tools can be identified. I have discussed flow chart, then you want to see the big picture how things are happening, check sheets are used for data collection. These all tools are used for data analysis.

Here we will record the errors. how frequently they are happening, scatter diagram, how results if you will implement some solutions, how the results are improving, you can use control charts to be in within the range, then problem identification, you can do fishbone analysis, cause and effect diagram and in the end you can prioritize the solution as well. For the same problem if you are finding 2, 3 solutions so that those solutions also you can prioritize. So, another approach is quality circle, this is voluntarily group and not very formal right. So, may be 8 to 10 peoples are part of that voluntarily group and they are discussing on some issue, let us say the issue like we talked about related to packaging. so they will maybe voluntarily people one or two person will come from production department one or two people will come from quality department voluntarily one or two people will come from R&D department from maintenance department from training and development department like this right so who are directly indirectly are linked with that particular problem now they will meet regularly this is a kind of quality circle they will meet regularly they will find out the solution do the brainstorming sessions will come up with the results right so and then will suggest those results to the higher management now if it is related to packaging let's say packaging we need to change the raw material right so this can be one of the suggestion so R&D people will also say about raw material how we can improve in a better way right then quality people will also say whether the quality will be improved or if you are changing the raw material it will degrade the quality further right then so all will check the feasibility even accounting department will be there with their accounts that this will add the cost further we cannot afford that like these many arguments can be there so in the end you all the members what are the members there is top management their role is to support the QC right whatever suggestion they are giving they need to sanction the budget to implement those solutions so that they can feel you know motivated they should provide the award kind of system and there if their suggestions are being implemented.

So, next time they will also be willing to you know meet on these kind of informal teams as a informal teams and then they will try to solve. So, many in manufacturing units these

kind of groups are very very common right. Then steering committee of may be senior people will be there who will be. you know evaluating those quality circle whether really that quality circle is required for that particular problem or not what are the objectives whether they are within the guidelines of broader guidelines of the organization or they are giving some out of the box suggestion which suggestion is ok we can implement can reduce the problem drastically but then what about the cost what about the other ethical constraints what about other legal constraints whether we can go for that or not right there is coordinator who will be coordinating between quality circle higher management whatever suggestion they will give they will give that person is going to coordinate with them and will keep the track of activities whatever they are doing ok then there is facilitator He will be the senior officer of the department and he will be arranging all the necessary training programs and he will set up the links between the quality circles and management and will ensure the participative culture.

So, this is the main role of facilitator. leader obviously will be one person who will be leading that team will be defining the problem various aspects of that problem what can be you know the redressal schemes so in that way he is going to elaborate with the team and obviously with the team members who are the ultimate stakeholders coming up with the suggestions, brainstorming sessions, giving up their feedback and then the leader will combine that and obviously that cross questioning and all those things will be there so that we can validate the solution in the end whether we can really go for those solutions or not. So, the fourth tool is 5S philosophy which is Japanese term seiri, seiton, seiso, seiketsu, and shitsuke We can implement for housekeeping so that the inventory can be managed within the warehouse in a proper way. and we can sustain that properly the first is sorting you should sort your material because sorting is very much required in warehouse where you need to sometimes you are sorting pin code wise sometimes you are sorting product wise sometimes you are sorting as per the requirements of the product right cold storage products will be stored in that area and rest of the products will be stored delicate items how you should handle where you should store those items right so how you are designing the shelf space and all that set in order you need to set in order all the items as per size as per uses or as per product nature shine you need to maintain the cleanliness of the workplace so that smooth function can be ensured and accidents can be reduced standardize once it is done you need to standardize the process so that repetitively you should be able to do that it's not one day you are setting in order and next day everything is again on the back track you are So, sustaining once the system is standardized you need to sustain that for forever. So, this is how this approach of housekeeping can be very helpful when we are managing our inventory within the warehouses.

So, the last one is benchmarking like I told you. So, you decided your KPIs then these

KPIs you will find out the KPI of the best player in the market and find out the gaps between you there is one approach of balance score card we will try to cover that as well with respect to I will try to design with respect to the supply chain logistics management. So, this is one approach how you can you know identify the gaps and this is one concept of house of quality these two things we will go for. right house of quality where you will identify your present situation where the best player benchmark is so that you can find out the gaps right and best practices so that it will provide you the opportunities right so where you are lacking how you can improve your performance matrix how why you are late than others right so your delivery is delayed why wrong product are shipped so frequently on your platform why that is happening why you are always shortage of inventory why there is defected product is shipped to the customer so there is something wrong with the courier partner right so to define the benchmarking we have six steps first of all you need to define the objective so what are the area where you want to improve you will keep those as objective then you will identify those kpis let us first improve our transportation sector so because transportation is contributing 60 to 70 percent of the cost let us say so we need to improve that part right then gather data what are transportation related kpis what are our situation and what is the situation of the leader in that industry if DHL you are comparing delivery you are comparing so what is the situation of those player right as far as those kpis are concerned then you need to select the partner right So, you need to exchange the information with your courier partners where we can work, logistics partner or transportation partners where we can improve and then again after improvement you will analyze the data, compare the data whether you have made the significant improvement is there or not. So, that you need to see again you will identify the opportunity that you have addressed the problem up to 30 percent, but still you need to go further let us say take the next step which will may be will again improve the situation by 50 percent and we can cut down the complaints by another 50 percent. So, these all are the tools we can use obviously, I will discuss some tools in supply chain management as well.

So, there we will be covering the broader perspective. So, we can conclude that as customer focus. So, goal is to provide the best quality product delivered at best experience that will only happen when we will set up all our these KPIs in order right and we need to shine these KPIs every day. So, that we can sustain these for a longer period there should be environment of continuous improvement that plan do check act cycle should be continuous right employee empowerment qc circles employee should be part of that and if i am addressing some problem of may be my organization and i am acknowledge in that way i will feel motivated always people will come with their suggestions how they can and you believe me in manufacturing industry major major problems are solved by those illiterate people who are working on the production line because they are continuously day and night doing the same repetitive action no one can

understand better than them because they are continuously if you are producing daily 10,000 iodines 10,000 times they are doing the same operation so you can just imagine how efficient and in that way they can be knowledgeable in that way use of quality tools so you need to overnight you cannot use these tools you need to prepare your team who who can be very good in collecting data analyzing the problem and coming up with the solutions and then also prioritizing the solution which solution we can go for you know first phase second phase third phase product design within the product we should meet the customer expectation and you should design your process like that your process is not damaging the packaging, your process is not doing all the screen scratches. So, your process should be defect free and then obviously, supplier role is important, how you can control the quality at the supplier end. So, you need to align all these players everywhere you need to go for the quality tools.

whatever we discussed and only then you can improve the overall performance. So, these all are the references other than the books referred in first few sessions. So, that is all from my side. Thank you very much.