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**Lecture 38 : Vendor Rating**

Hello, dear friends. Welcome to the NPTEL course on Logistics and Supply Chain Management. So, in the last few sessions, we discussed strategic sourcing and how we can finalize different criteria so that we can select our strategic partners correctly. So, these strategic partners can be located down the supply chain, meaning in the forward supply chain, or they can be in the backward supply chain. So, if you are outsourcing, that means you are choosing your external strategic partners. So, here we will specifically discuss vendor rating, which is very important.

My personal experience shows that when we talk about sourcing from different suppliers, it becomes essential to continuously monitor their performance. Against some predefined set of criteria, we can identify any shortcomings over time and provide, most importantly, positive feedback to our suppliers. Eliminating suppliers based on criteria such as price, quality, delivery, or the services they provide will not work for any manufacturer or organization that is offering products and services. So, it's such a beautiful concept of vendor rating and topic.

So, we will cover the different criteria involved in vendor rating, why this is necessary, and some steps and techniques for vendor rating. I will specifically provide you with one very practical example of how we are using the vendor rating format in the industries where we evaluate our stakeholders who supply different types of materials to your organization. We will discuss one case study related to that, and then we will conclude this session on vendor rating. So, vendor rating is a formal evaluation system for all the vendors or suppliers who provide you with different components, right? So, talking about formal evaluation, we have now fixed our external partners. Now, we are talking about the routine, repetitive purchasing decisions, right? So, we are obviously discussing repetitive purchasing decisions.

For a particular component, we might have fixed maybe 4, 5, or 6 suppliers, depending on various parameters. For instance, whether you want a few suppliers, many suppliers, or to stick with only one supplier depends on the situation, the industry scenario, and the

product or service you are dealing with. Essentially, when we talk about evaluating vendor ratings.

The major points that come to mind are obviously related to the price, which is very important, as well as the quality of the materials they are supplying and the delivery schedule. "Services refer to any queries related to the material they are providing or any complaints regarding how they are handling those materials, as well as any aspects of service, such as how promptly they respond to the queries of the manufacturing unit. These are a few important criteria that you continuously evolve, but they are not the only criteria. Now, let's talk about you: sometimes you may consider the industrial relations of the vendor, and at other times, you may consider the financial position of the vendor." You may consider how they are innovating or renovating their products by designing different features and supplying various components to you.

These are broad scenarios; depending on your requirements, you can continue evaluating your vendor. The basic purpose is to assign a rating or score to each vendor. When we evaluate 1, 2, 3, 4, or 5 vendors, we are prioritizing based on whatever predetermined set of criteria exists. This will help you make informed decisions when you proceed. Allocating the orders to different vendors serves a basic purpose: when we allocate orders, the maximum should go to the vendor with the highest rating, as this vendor is more strategic and offers us more options.

Therefore, we should allocate the maximum order to that vendor. Obviously, when you are monitoring and assessing vendor performance, one key point is providing feedback to the supplier, which will help them continuously improve or benchmark their practices against the best available practices in the industry. This will also minimize subjectivity in judgment. Subjectivity means.

.. Then, in that way, you will make a more informed decision about whom you should prioritize—whether it be based on quality, price, or other factors. If you are transitioning from model A to offering model B in the market with different features, you will need to consider which vendors among the five will provide materials for your model B. Therefore, you will select the three vendors that best meet your requirements. Fair enough on those parameters. Typically, we calculate different mathematical formula techniques to determine the weighted score for each vendor, and then we can use this information to prioritize them.

So, this is important because it will ensure you have effective purchasing and

procurement rights, especially when you are dealing with industries where you are heavily purchasing items in terms of volume. The quantity may not be that high in terms of the value of the product. The price is very high, or maybe you are referring to those sensitive products, the components, or the raw materials on which the complete functionality and safety-related parameters of your product depend, right? So, in that way, you need to evaluate the vendor. Usually, we evaluate your vendors based on price. Quality: what are the prices they are offering, what are the quality levels of the services they provide, and how do they ensure delivery? We will discuss different scenarios regarding how and where these various criteria are important.

Let me give you a basic example: let's say we are manufacturing home appliances or working in the automobile industry, and we are using screws as components. Here's a corrected version of the sentence: "Coming from our, let's say, four different vendors, this is obviously a very small component. If you are talking about any industry, such as home appliances, the value may be that if you are using ten screws, it could be more than that for one product. Therefore, the value may not exceed 10 or 15 rupees, depending on the circumstances." Again, the specification of the screw is important.

Whenever you receive the lot, what is the first step? The raw material arrives, and we have discussed that, firstly, it goes to the IQC (Incoming Quality Control) within the manufacturing organization. Please keep this basic structure in mind so that throughout this session, whatever I refer to, you can relate it to how it happens in the real world. So, what will IQC do? IQC based on certain sampling may involve a lot of 10,000 units. They may pick 250 units and then check those units to determine whether the lot is acceptable or not. Now, how will you define whether that lot is okay or not? Obviously, you might have defined some dimensions: the length of the screw should be this much, plus or minus tolerance, and you would say that the diameter should be this much.

Again, another dimension is the diameter of the thread, which should be this much. So, we have dimension 1, dimension 2, and dimension 3. These are some of the few dimensions that are very important when discussing a very small component screw. Now, you have checked 250 materials, and this is not only that; this is the quantitative method you used. You recorded various quantitative parameters for dimensions 1, 2, 3, 4, and 5.

Then there will be some qualitative measures. Let us discuss qualitative measures. If there is extra material on that thread, it means you should check it. This may be within the limit for this dimension, but the presence of extra material during the lathe operation could be due to tool wear or other technical reasons. If extra material is present, it may damage the hole where you plan to insert the screw.

Aesthetically, you should check for any extra material, and if the shape of the screw is deviated, you should qualitatively assess some visual parameters, such as color. For this kind of defect, you can check for flavor, depending on whether that is important for the industry. These are some of the qualitative parameters. The shape can also be observed visually. So, whenever we are making the vendor rating, we evaluate one quantitative parameter and one qualitative parameter.

Now, depending on this sampling, you checked both the qualitative and quantitative parameters that you set for that particular component. Here's a corrected version of the sentence: "And in this industry, if I am talking about this vendor rating format for suppliers, then if four suppliers are supplying the same component, the vendor rating format for all four suppliers will be the same." If this lot is okay, then what will happen is that you will store it in the storage department, from where it will go to the production floor. Production will take place, and the finished goods will be delivered. This is how it will happen.

If the lot is not okay, it will be sent back to the vendor. So, that means these two decisions are made, but the third decision is also there; if it is not okay and you are in urgent need of that material, you cannot simply reject it and send it back to the vendor. So, the option you choose at that time may be something you will segregate on your own. And whatever is okay, you may move to the store, and anything that is rejected may be sent back, sorry, not to IQC, but to the raw material supplier. So, that means the third option is segregation.

Now you see how this vendor is connected. First, this vendor is going to gather all the feedback information from IQC. If any lot is rejected at the IQC end, it means the whole lot will be rejected based on sampling and sent back to the raw material supplier. They will process it again, which will incur additional costs. But if there is some rejection in between, you can segregate and still keep the production line running.

If you return the lot, your entire production line may stop. So, what will you decide? You will choose to segregate. The cost of segregation may involve 5 to 10 people working on it, and you will raise a debit note through your accounts department to that vendor because it is the responsibility of the raw material supplier to ensure proper quality. Raw material, so that the cost of segregation will be borne by your vendor. Corrected: The raw material will have the cost of segregation borne by your vendor.

Once you accept the lot and start producing the product on the production line, you might notice that after using all 500 screws, there are sometimes 10 to 15 screws missing. Occasionally, the cap is not present, or the threads are missing, and you may not catch these issues during your sampling. Additionally, the shape might be slightly deviated. During the process, you are now producing a zero-hour rejection, which means you did not process that material. Before putting in the screw, the person who was working at that stage found that the screw was not okay.

Based on that, it is rejected; this is a zero-hour rejection. Whatever you ultimately decide to use from that lot, let's say if 500 pieces are ejected, these will be sent back to the raw material supplier, and a debit note will be raised against that raw material supplier for that lot. So, keep this complete picture in mind so that we can quickly refer to it. The factors considered in bender rating quality are primarily based on meeting all the specifications. For example, you need to keep in mind the screw diameter, thread diameter, cap diameter, and screw length.

These are the specific dimensions you must adhere to. Additionally, some visual inspection is necessary to ensure that you are sticking to those dimensions, which indicates that you are meeting the quality requirements and minimizing the need for rework or repair. The segregation we performed is currently under rework or repair, so that should not happen. Regarding competitive pricing, what if you are buying from four different vendors, each providing different rates? You will keep both the lowest-priced vendor and the highest-priced vendor because we cannot eliminate any vendor. We need to develop the vendors so they can be more efficient, and quality can be improved.

This is a system in which, if our vendors improve, our total productivity will automatically improve. Factors we will observe include price stability and accuracy, meaning whether the prices from a particular vendor are fluctuating or if they are providing a stable pricing strategy and accurate billing. Accuracy in billing "If they are changing the price, are they giving us any prior notice? These are the kinds of things you should be recording with that particular vendor's delivery. Now, we have four vendors, and out of those four, one is always struggling with delivery. One person is dedicatedly calling him again and again to ask where the lot is, and then we are waiting.

If he says it will be delivered within five days, it is always plus or minus three days. This means there is huge variability in that regard." So, knowing that variability is present and that lead time is high will force you to keep extra inventory at your manufacturing unit. So, that is an extra cost. So, these delivery issues are also very important.

Services: I discussed what kind of services we provide as a manufacturer, specifically how quickly and effectively we resolve any complaints that arise, and then communicate our actions back to you. We have made this correction, and we are supplying you with the material again; this is the kind of service we provide. So, we will look at what can be included under each point. I will show you one vendor rating format, and we will discuss it there. Reliability: As I mentioned, one vendor may be struggling with delivery, but he is very good with quality.

So, you cannot eliminate the possibility that one vendor may be struggling to maintain quality, even though that vendor might be very efficient and is producing for many other industry players. This could be due to frequent transitions and changes, which may compromise quality. However, he is offering you a price that is 5 to 10 percent lower than other vendors, yet you still cannot disregard this. Obviously, you will try to improve his quality as well, but you cannot. So few vendors are excelling in certain parameters, while others are excelling in different ones.

That is why this complete basket is required; you should not rely solely on one vendor's innovation. How prepared is your vendor for this? Based on the feedback you are providing, how likely is he to accept that feedback and be ready to make those technical improvements? If you change the outdated technology, productivity may improve, prices may decrease, and quality may enhance. So, how quickly your vendor is ready to innovate and provide you with a unique and differentiated product. A relationship means the effective communication, transparency, and collaboration you maintain with your vendor. This can only happen when you clearly provide your vendors with feedback and give them improvement measures where they can enhance their performance.

During my industry experience, I have observed that whenever a manufacturer is coming up with a new product or service, it often happens that when you start purchasing the raw materials to make the finished goods, then the... Very important feedback comes from the vendor side. If we replace the design of that component, the material of that component, or the grading of that component, then the overall quality, performance, and durability of that particular product you are manufacturing will increase.

So, that will only happen when you maintain a transparent relationship and communication is present. To ensure the need for vendor rating, we obviously need to evaluate performance so that we can make informed decisions based on delivery, price, quality, and services. Only then can we place the order. It is not solely in the hands of the purchasing department; while the purchasing department raises the purchase order, there

may be instances where they compromise on quality or exhibit bias towards certain vendors, which should not happen. So, it should be very, very objective, right? Quantitatively, you are recording all the parameters, and then you are saying that this vendor should receive 70 percent of the order while the rest of the vendors should receive 30 percent of the order.

This evaluation will also help you identify their strengths and weaknesses. Over time, if you continue with this process... One model will not last for more than 4, 5, or 10 years, depending on the nature of the industry and the specific product.

As we have discussed in some sessions, technological advancements are making product life much shorter. Therefore, if the product life is shorter, that means... So, you are continuously and repetitively changing the product design.

How will you change the product design? Only with the collaboration of the suppliers. Supplier development is the responsibility of the manufacturing unit that is purchasing raw materials from the supplier. It is not simply a matter of rejecting or accepting the lot. You need to train them, and you need to share the best practices. Let's say, as a manufacturing unit, you are a large unit, so you may be implementing some inventory management strategies.

You are implementing inventory management software, right? Or are you using warehousing management software (WMS)? Or, if you are implementing an ERP system, how can you implement the same technology at your supplier's end so that the efficiency you are achieving by using that software can also be achieved by that particular vendor? If he is efficient, then you can negotiate the price effectively. The phrase "risk mitigation" is grammatically correct as it stands. If you need it in a complete sentence, please provide more context. This will only happen if you know that this vendor is always struggling with delivery; let's say he takes plus or minus three days. Therefore, I need to mitigate this risk by maintaining safety stock.

How can I take proactive measures in this regard? If one vendor is struggling to maintain quality, how can I find alternatives to achieve the right cost optimization? For example, if you are implementing an inventory management system at your vendor's end, the overall cost of maintaining that inventory can be minimized. This means that... That cost will lead to an increase in the margin of the overall supply chain, right? The overall supply

chain is a complete concept that we have discussed in terms of the system concept, right? Reducing rework should ensure that segregation does not happen correctly.

We are now establishing performance benchmarks because we are evaluating based on certain criteria, which we are continually updating. In that way, we can benchmark those criteria and inform our vendors where they are lagging. We can help them define the path for continuous improvement in supplier relationship management by evaluating the vendors and providing continuous feedback and transparent communication. This will help them understand where they stand, and being transparent with your vendors ensures that we are making decisions very objectively.

So your vendor also knows that this is being done objectively. Let's say Ola. What is Ola doing? They are a very big player in providing taxi services, but do they own any taxis? No, they do not own any. Their main stakeholders are the local taxi unions, owners, or drivers who are operating or providing the taxi services, right? Now, this makes it very transparent to the driver how you will behave with whomever is using your services, your customers. It shows how you are making them comfortable, maintaining cleanliness in the vehicle, taking the optimized route, following the predefined route as indicated, and providing different charging options.

You can pay through a credit card by scanning with your mobile. However, if you are forcing your customers to pay only in cash, this can lead to issues. Sometimes, they do not turn on the AC, among other things. Additionally, you are rating each driver for every ride, so now drivers know that if they receive lower ratings.

.. Here's a corrected version of your sentence: "Feedback is important because the next time there is a ride option, or when a customer places an order, the nearby best car driver will take that order. This is how their system works based on distance. If there are many taxi drivers available, the one with the highest feedback will receive the order. That is why, after completing the ride, they usually ask customers to give them the best rating." so what are the vendor rating steps you need to define the evaluation criteria very clearly right and I told you this may vary with the industry somewhere in industry may be price is very important where you are talking about the repetitive items routine items right where you need to be efficient your home appliances industry sometimes you are talking about quality is very important when you talk about the high status product right when you talk about Rolex when you talk about BMW, sometimes you talk about the safety parameters are very important, then you do not want to compromise with safety, quality, price can be increased.



So, then if you are supplying components let us say to airline industry, who is building the aeroplane? So, then there the importance of the same screw, screw you are using in your desk, screw you are using in your chair, screw you are using in car, screw you are using in aeroplane, you just see how it is important when you are using the same screw in the aeroplane. So, there safety important parameters are very important. once you have picked the criteria you need to evaluate all the criteria right let's say if you are you are buying shirt what can be the different criteria to buy a shirt right there can be cost then quality then brand maybe you are very particular about the brand then comfortness then maybe availability right these can so many other things can be there now for me maybe one person is very very particular about the comfortness. So, I will give the maximum weightage to let us say 30 percent to comfortness, then may next criterion may be I will give 20 percent to quality, next may be I will give may be 15 percent to cost, next may be I will give 10 percent I am very brand consciouss, likewise I will rate all because all criteria are not equally important. but the other person may be cost is very important will give the 70% weightage then I will go with may be rest 30% then I will see the quality may be 10% I will see the brand 5% likewise I the other person right that depends upon the person to person how they are doing that so this assigning the weight to criteria will happen will be done using that.

Once criteria are set now you will gather data and where from where you will gather the data you are continuously recording the performance of the vendors through your IQC from where you are checking the lot through your production floor where zero hour rejection is coming through your accounting purchase department how quickly they are accepting the order how quickly they are processing the order and when you are making the payments and how they are settling the issues so then you will record data on all those parameters once it is done you will evaluate the performance based on whatever score may be 1 to 10 ,1 to 10 score you calculated but for all may be you will not calculate 1 to 10 if cost is important so you will wait little higher then may be rest is the quality so then quality you will rate 1 to 8 scale some other may be brand you will rate may be 1 to 5 scale depending upon whatever weight you want to offer. Otherwise, out of 10 you can give the score and then each score you can multiply with their weightage. If cost is may be 20 percent, so whatever score you are getting for cost you multiply by 0.20. And if you are giving quality may be 15 percent, you multiply quality score may be by 0.

15, this is how you will find out the performance. And overall rating you will sum up all the score for all vendors, V1 what is the vendor rating, V2 what is the vendor rating, V3 like this we will find out. then we will review and validate because for every lot you are receiving from that vendor you are making those evaluation, so keep on checking

evaluating right so we will give you continuous feedback and then this result will be given back to the vendor so that this should be very transparent so that they can make the improvements right so OLA should share their feedback with the drivers as well so that driver should know that this time he made this mistake did not turn on the AC properly so that that's why he got little lesser ranking right then use ratings for decision making next time OLA in their system so based on ranking based on how near that taxi driver is they will allot the rides to different taxi drivers so what are different techniques we will quickly go through these methods how we can calculate the vendor rating. Categorical plan is first subjective method where you can use a quality is one, delivery is another one, price is another one. Let's say three parameters are there, quality may be sub parameters are there, delivery sub parameters are there, price also sub parameters are there. So, either good or satisfactory or poor you will rate on each sub dimension, each sub parameter.

This is categorical plan, but this is subjective method right because if I am evaluating on quality what is good for me may be very good for other person or may be satisfactory for other person because my evaluation in whatever mind state I am having at that time or may be usually my evaluation is may be sometimes we usually say get this feedback as teacher then marking is very strict The other person says that marking is very lenient. Same person evaluating the same question paper. Weighted plan, already I talked you. Let us say quality, 1 person got out of 10, we are evaluating vendor 1.

So, vendor 1 got 8 on quality, delivery 7, price 5. Now, I will provide the weightage, quality is let us say 40 percent important, this delivery is let us say 35 percent important and then rest is 0.25 I think, so that is important. So, whatever score I will get out of this by multiplying this I will sum up this score, this is the vendor weighted point rating for vendor 1, same way I will calculate the weighted point rating for vendor 2, 3, 4. cost ratio plan cost ratio plan is calculated whatever is the cost occurred to acquire those services right so if i'm talking about let's say the example is the delivery cost is five thousand rupees and the total cost of acquiring that lot is 1 lakh rupees so delivery cost ratio will be how much delivery cost is adding to the total cost so this is 5000 divided by 1 lakh will be 10 percent that means whatever order we are placing delivery cost is adding 10 percent into that so we can see whether we where is the benchmark if other industries are managing somewhere around 7 percent delivery cost that means we need to make sure make efficient our delivery logistics distribution network the inventory cost is let's say 20 percent so other industries are maintaining somewhere around 12 to 13 percent why our inventory cost because we are keeping extra stock so that cost to ratio you can maintain Fourth decision matrix, this is a kind of pair wise comparison matrix we are doing, where we are evaluating the set of criteria with respect to each other.

Criteria 1 quality is important than delivery. So, if it is so, we will assign weight 1, otherwise we will assign weight 0. This is just how you can assign weights, right. Service cost ratio, particular services you are providing like intangible services. So, then you can, you know, providing those extra services. See, if we are saying that any, you know, problem with using this product or services, you can call our customer care center.

That means, setting up customer care services is cost to me. So, that is cost, this is how you can understand. So, IBM quality rating system, so they are calculating the quality cost means desired cost of inspection and actual cost, because always actual cost inspection is higher. So, how we can reduce the cost of inspection? I talked about in quality insurance, when we talked about quality tools, how quality is free. so the purpose of quality department is not to inspect the purpose is to seize the whole inspection, no inspection should be there because we want that it should be error free so how we can error free when there is no inspection is required right when you are error free Well quality rating system, this is how many lots you are received and then how many are rejected, so based on that ratio you are defining that lot quality index, what is lot quality index. So, how you are prioritizing different scenario, let us say L1 is lot 1, you accepted as it is, no rejection is there.

then L2 number of lots rejected by sampling but still you labeled means you segregated you run that lot in the production line right number of lot rejected and disposition reworked at the supplier end segregated at the supplier end then lots rejected and returned back so that means that means if you are returning back those component that is cost transportation cost right once you received again you send back that transportation cost storage cost inspection cost again they will transform it and then will maintain it and then you are getting the repaired product when i am paying for new product why i should use the repaired one so as this will grow you can see here the cost priority is attached higher when you are you know sending back the material that means the performance will be reduced so this is what I will share with you one quality format which in industry we are using you can just go through ok so here is one vendor rating format which I used to use when I was working as you know quality engineer so in one of the organization so you can see so this is the vendor rating right by co maker whosoever co maker means manufacturer vendor rating for particular vendor number is defined and then date of issue vendor co vendor name you can mention here the part name or part code right because different components small small components are there if you are using ten different types of screw so that code will be different for all right so all that information will come and then you can see the first one is quality so quality means all the parameters related to quality see now quality description sheet this is the sheet I was talking about how you are developing the quality description sheet you have defined the screw diameter thread

diameter then the length of the screw that is quality description sheet and then visually you are inspecting color you are inspecting flavor you are inspecting whatever dimension you are recording that comes under your quality description sheet now based on that either you will accept the lot or reject let's say because this is done for 25 lots if all 25 lots are accepted that means 0 percent rejected that means that vendor will get 5 out of 5. If 2 lots are rejected vendor will get 1 score. So, this is one parameter. Then quality complaint note, so how many quality complaint notes you raised against that vendor? Let us say no quality complaint note to the vendor that means 5 rating, no complaint against that vendor.

So, accordingly 1 complaint, 2 complaint you will assign the rating. then once you raise the quality complaint how quickly you are getting the CAPA corrective action and preventive action and they have done the corrective measures and send you the report let us say if one your supplier is you know CAPA report he has submitted and no reputation in next 10 lots that means he will get the 10 out of 10 right because he quickly worked on that and improved that right so then you can see this is not fixed it should be 10 only for some product you may take 20 for some product you may take 5 right so this is just one example detailed inspection report if your vendor is sending sharing with you all the time detailed inspection report means whatever lot you are inspecting that means you will give 5 if he is not sharing you can give 0 in intermediary level also you can assign Vendor process maturity and setup, so how mature he is with the process, IQC, PQC, OQC means all quality measures they are taking, they have standardized their production process, so 5 means then if they are generating all these reports they will get 5. Then vendor aligned to, this is related to Philips program because I was working with that. there is flips bow program right under that program if you are fully aligned whatever measures they have suggested you have also implemented so then 5 points right if any means particular suggestion from any prior right so rejection part on the line this is what i was talking about your zero hour rejection you started using the screw but suddenly you realize that the cap is missing the thread is missing right so then how many times how much is the rejection 100 units you are using what is the rejection rate less than 0.1% you will give 5 marks somewhere equal to less than 2% you will give 3 marks likewise now this is related to quality now next is price performance so obviously price performance how you will record whether that person has increased the price maintained the same price or lower down the price if lower down the price by 5 percent you will give 10 because may be you have increased the lot quantity if less than by 2 percent you will give the 5 marks right if the person has increased the price you will give the 0 marks right so this is how you will do the pricing ok So, then delivery, so related to delivery whether you are receiving all the deliveries within plus minus 5 percent deviation or 7 percent deviation 1 or 2 days here and there you will this see you can see the highest priority is given here to the delivery. 40 marks if you are delivering on time you will get 40 marks

so delivery is very important responsiveness how quickly you are generating the report CAPA report or how quickly you are responding to your you know whatever complaint your manufacturer is raising and how quickly you are you know confirming the purchase order once the purchase order is accepted and then you are confirming it within three days so that means you will get three marks right so here confirmation is not that important but you can see here the Delivery is very important because if somewhere I will lack with the inventory my all 500 people will sit down idle on the production line.

So, overall rating will calculate if it is less than 50 you will say poor, if it is 80, 50 to 80 average. anything more than 80 means good right. So this is one format how you can go for the vendor rating. So same way you can develop the vendor rating as per your industry requirement right.

So then advantages of vendor rating you can see. Minimize subjectivity in taking decisions. Obviously, we discussed there is no power with the purchase department that if they want to favor some vendors, they cannot do that. Feedback from all area, from purchase department you are getting that whether they have raised the purchase price or not. Accounting how many days they are giving us to settle down the payment. right then quality department what are the quality features they are lagging your vendors are lagging delivery again store department will help us to find out that so all these departments are giving you the feedback and that feedback is given back to the vendors so better communication will be there overall control to the vendors specific action if you are struggling with maintaining the inventory you will get that feedback right so continuously we will review those standards so we can see that this vendor rating is so important if you can optimize vendor your because from where your supply chain is originating from the vendor so first pillar is vendor only so if you will manage that pillar very effectively, efficiently there only the supply chain performance will start we have included some qualitative, quantitative measures so you can see this is not only the fixed criteria depending upon your industry you can work on those criteria we have so many research papers you are deciding the vendors, picking the vendors, vendor rating multi criteria decision making techniques are there we are using methodology like analytical hierarchy process, analytical network process, TOPSIS to you know set the benchmark and demetal analysis, multi-criteria decision making tools we are using to evaluate the performance of the vendors to find out where they are right now, what is the gap, how we can fill that gap right.

So this is all about vendor rating, these are some of the references you can go for further rating, so thank you very much.