

Decision Support System for Managers
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Module – 04

Lecture – 10

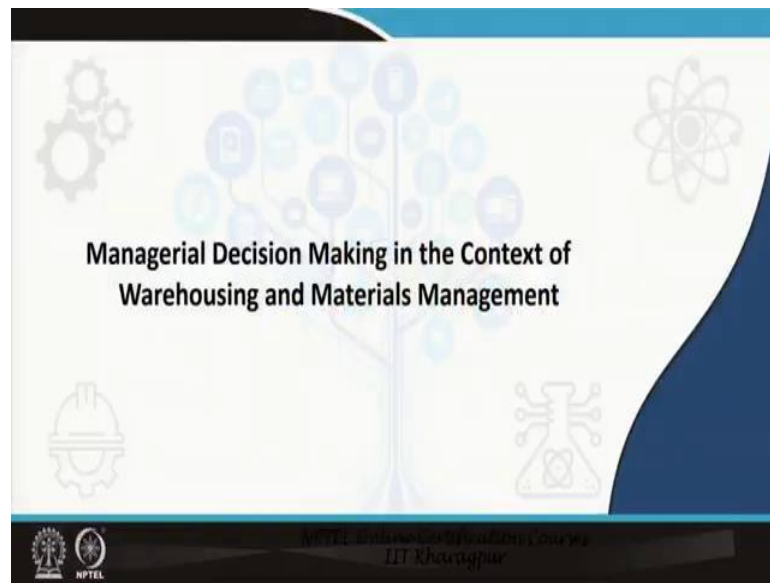
Managerial Decision Making in the Context of Warehousing and Materials Management

Hello and welcome to “Decision Support Systems for Managers”; we are into module 4, lecture 10 and today this lecture is the last lecture on this module of ‘decision support systems for materials managers’; ok; what have we covered till now?

We have covered the entire gamut of warehousing and materials management and in the last week, we ended up to AS/RS system; that is advanced sorry; automated storage and replenishment systems; ok. And there we see ultimately what we learned through all these 10 lectures under this module is, cost is paramount, and every organization is doing everything possible to reduce, reduce and reduce cost.

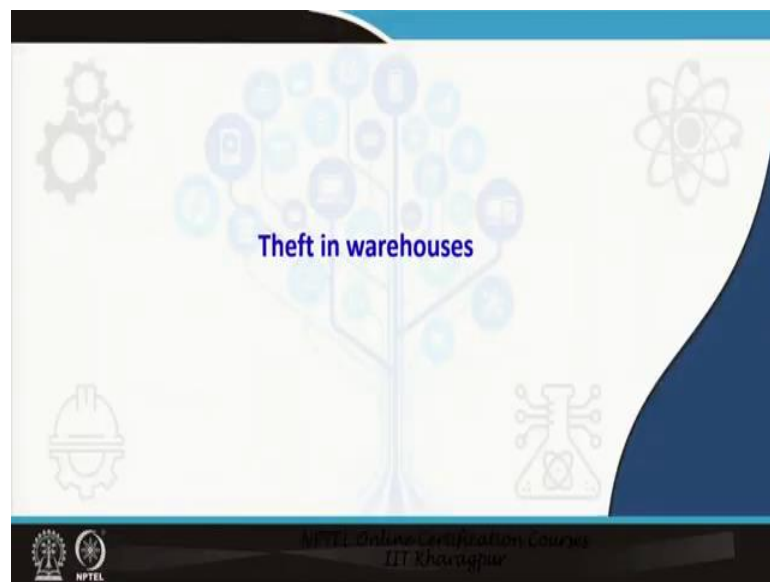
And every organization understands, a machine is less, less and less costly. So, everywhere there is tremendous pressure on humans and work force to sustain and let the system sustain. So, it is a difficult and challenging task; we will come to it a bit later on. But today this module is mainly focused on ‘decision making managerial aspects of warehousing’; ok; clear!

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So, managerial decision making in the context of warehousing. The first thing that we will learn here or we will discuss here is theft in warehouses; ok.

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Now, whatever be it, no matter whatever, whichever industry, whichever systems, theft in warehouses has been there point of discussion and it is still there; ok. I am smiling because one of my very known and a very-very senior person who has worked in industry for many-many years. And have very recently retired he told me one very interesting thing, with he had a very different way of putting this thing called theft.

He said there are two types of thefts; one is dead theft remember you will not get these in any books one is dead, d e a d dead theft and the other is live l i v e or alive ok. Alive theft a life theft and dead theft. What is dead theft? Dead theft is it will happen very common it will happen ok, you cannot prevent it ok, knowingly, unknowingly, it will happen knowingly also, but unknowingly also.

For example, my office gives me pen to write in the office right that is office is giving me pen and paper to write within the office right. But what will happen? At the end of the day, the pen is here in my pocket; the end of the day the pen is here in my pocket; right.

So, I go away like I go like that, I myself do not know that the it is an office pen I should keep it back in my office, but next day it comes back to the office again next day it comes back to the office. So, this is an also I may lose it also, in the office also see certain things we call as consumables we consume it.

Stapler you think each one of you think in your work setting at a home also. How many times you have lost a stapler gone, these will happen, we lose it sometimes we do not steal it we lose it because kept it somewhere not getting it let us get a new one this is called dead theft; ok; clear; dead theft.

Other is life theft, that life theft is actually the one that we should be worried about dead theft will happen you cannot, I remember one day two people I was travelling by train and two people were discussing they have a shop, one person was saying that, but quite some years back.

One person was saying that I have got an assistant and he is working for rupees 700 only per month 700 salary that assistant is working in that shop. I did not know those two people, but I was forced to comment how much who is that great soul who will work for rupees 700 per month right from morning 7 to night 11, who is that great soul. Please, allow me to meet him that is the; that means, there is some other incentive unless you are really a person from the ascetic world there is some other incentive.

So, theft are of two types dead and alive or life theft anyway we are not concerned with the dead theft that will happen normal loss it will happen ok, but we are concerned with the life thefts right. So, let us now discuss the life thefts possible in a warehouse; ok.

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1. Trucker (truck Driver) calls the warehouse and asks for a delivery time and informs about the type of consignment

Potential Problems	Probable Solutions
Trucker gives to warehouse to get a good delivery time	Have a set schedule for each transporter/ type of consignment
Is the trucker giving right information about the type of cargo	Cross check against the Advance Shipping Note (ASN) sent by the consignor

Ref.
1. Practical Handbook of Warehousing; Kenneth B Ackerman; Springer Science + Business Media BV
2. The Warehouse Management Handbook; James A Tompkins & Jerry D Smith (Ed.); Tompkins Associates, Inc.

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Step 1, first thing in the morning in the warehouse for phone call will come from the truck driver which we call as a trucker here, they will ask I am coming this is my vehicle number, I am coming from some place in Himachal Pradesh, I am standing at such and such place, give me a time when I can enter the warehouse and download the material; ok.

Now, who is the truck driver, truck driver is a non-entity, the transport agency is the entity. If the warehouse does not give the proper time to the truck driver who is losing? The transporting agency is losing because their vehicle is waiting, standing and unless the wheels roll you do not earn revenue.

So, what do the transporter do? The transporter paves attempts to pay bribe to the warehouse staff who is actually giving the time ok; who is actually giving the time. So, trucker gives the warehouse trucker gives bribe to warehouse this one word missing trucker sorry yeah, trucker gives money to warehouse to get a good delivery time. How to prevent it? Have a set schedule for each transporter a type of consignment that ok, small consignments morning irrespective of the transporter, afternoon this, evening this.

Is the trucker giving right information about the type of cargo? Check, cross check with the advanced shipping note. Why happens why this happens you know. Here is your origin factory, sorry warehouse A; warehouse A and 10 sorry and 10 kilometer away is warehouse B. Now, the truck driver calls up warehouse A and says I have come this is

my vehicle number give me a time and you have given time you are a good person you have given time, but is at all this truck driver slated for warehouse A or is he slated for warehouse B.

He has done a trick; he does not want to travel another 10 kilometers so, same company warehouse same company two warehouses. So, what he does? He dumps his product in warehouse A and goes away. So, check with the shipping note, is the driver really assigned to your warehouse; ok.

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2. Warehouse staff compares the information given by the trucker against the Advance Shipping Note (ASN) received earlier by the warehouse	
Potential Problems	Probable Solutions
Are there indications of alterations to the ASN, such as illegible numbers, things scratched out, or things written in?	The ASN should come from the company/ vendor and not from the trucker. If in doubt, call the consignee

3. Trucker arrives and is assigned to a specified receiving door	
Potential Problems	Probable Solutions
If the trucker is assigned the same door every time, conspiracy between the trucker and the receiver may result	Rotate the assignment of doors

Ref.
1. Practical Handbook of Warehousing; Kenneth B Ackerman; Springer Science + Business Media BV
2. The Warehouse Management Handbook; James A Tompkins & Jerry D Smith (Eds.); Tompkins Associates, Inc.

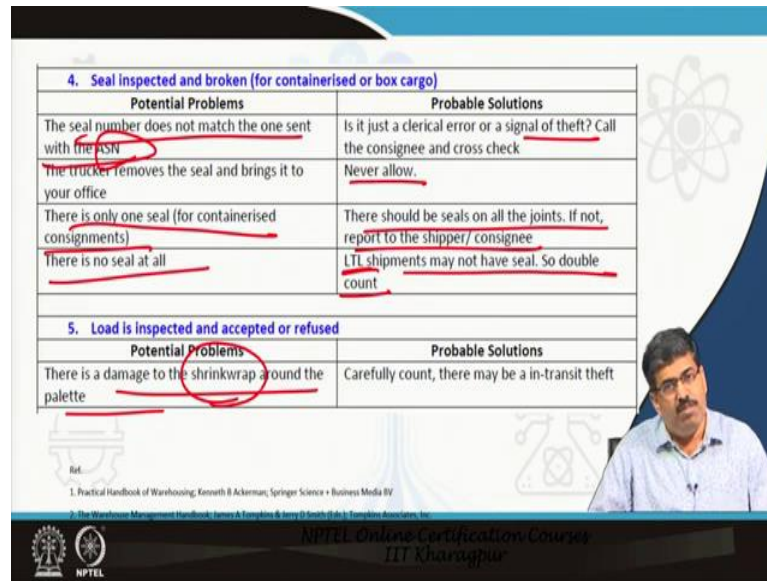
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Warehouse staff compares the information given by the trucker against the advanced shipping note received earlier by the warehouse ok. So, are there indications of alterations to the advanced shipping notes such as illegible numbers, things scratched out, etc.?

Checkup the advanced shipping note, advance shipping means it is come advance, in advance it is coming should come from the company or vendor and not from the trucker, if in doubt call the consigning most important.

The tracker arrives and is assigned to a specific receiving door, door in the warehouse where they will unload the material. If the trucker is assigned the same door every time conspiracy between the trucker and the receiver may happen, person who is receiving loading, unloading the goods rotate the assignment of doors.

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4. Seal inspected and broken (for containerised or box cargo)	
Potential Problems	Probable Solutions
The seal number does not match the one sent with the ASN	Is it just a clerical error or a signal of theft? Call the consignee and cross check
The trucker removes the seal and brings it to your office	Never allow.
There is only one seal (for containerised consignments)	There should be seals on all the joints. If not, report to the shipper/ consignee
There is no seal at all	LTL shipments may not have seal. So double count
5. Load is inspected and accepted or refused	
Potential Problems	Probable Solutions
There is a damage to the shrinkwrap around the palette	Carefully count, there may be a in-transit theft

1. Practical Handbook of Warehousing, Kenneth H Ackerman, Springer Science + Business Media BV
2. The Warehouse Management Handbook James A Tompkins & Jerry D Smith (Eds.), Tompkins Associates, Inc

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Seal, it has to be sealed right. The seal number that the container has to be sealed agreed, the seal number does not match the one sent with the advanced shipping note.

Just check up, is it a clerical error or a signal of a theft that the seal number is not matching. Sometimes what will happen, you know the truck driver will open the seal and bring you intact for you to check the seal number. So, you say; seal number is fine, keep it. But who has opened the seal? The truck driver. Was your representative there while opening the seal? No, right. So, the problem, ok. So, do not allow this.

Now, there is only one seal for containerized assignment, no there should be seals on all the joints. If not, report to the consignee and check whether they have put only one seal. If they say one seal, you ask them for an email and say that you send an email saying that; all our containers in future or that we have sent by this particular transport route all have only one seal that is a document that you should keep, otherwise you land into trouble.

There is no seal at all, less than truck load LTL shipments may not have seal. So, double count, whatever you are getting do a double count. Now, once they are dumbed down once they are down you have to count right and look at the problem. Most of the products, now particularly the Coke and Pepsi bottles etcetera, there is a plastic wrapping around; right.

There is a damage to the shrink wrap around the pallet damaged carefully count, there may be an in transit theft. You know what, these Coke and Pepsi bottles or any cold drink bottles they are 20 or 24 bottles they are wrapped around, if you pull one from the middle they will not collapse, you pull one from the side they will collapse. So, pulling can happen from the middle. So, be very careful; ok.

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Potential Problems	Probable Solutions
Goods left on the truck but a receipt for full unload is signed	Common theft Have a manager check that there is nothing left in the truck Randomly call back truck and check if anything is left over

Ref.
1. Practical Handbook of Warehousing; Kenneth B Ackerman; Springer Science + Business Media BV
2. The Warehouse Management Handbook; James A Tompkins & Jerry D Smith (Eds.); Tompkins Associates, Inc.

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Merchandise is unloaded; goods are left on the truck, but are received for full unload is signed. This is a common theft, unload one carton is still there on the truck. Have a manager checked that there is nothing left in the truck. Checked truck gone, randomly call back the truck and check if anything is left over, because once the truck has gone the truck driver may feel very complacent, call him back; ok; and check.

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Potential Problems	Probable Solutions
Products that have come in a pallet – some has been stolen	Items at the <u>centre of the pallet</u> can be removed, not evident by looking at the pallet Check centre of the pallet Sample checks of some pallets
Small amounts <u>are missing from the boxes</u> (if consignment in boxes)	Process of pilferage – boxes opened – materials removed – boxes resealed Use <u>tamper-evident tapes</u>
Unloaded merchandise is left in the staging area (temporary area)	<u>Very vulnerable at this point</u> Is the <u>trucker loitering around</u> ? Is there adequate security in the staging area?
Unloaded truck still at the loading/unloading bay	Who is watching the truck and the driver? If the truck has to wait, make sure its doors are locked and sealed

Ref.
1. Practical Handbook of Warehousing, Kenneth B Ackerman; Springer Science + Business Media BV
2. The Warehouse Management Handbook; James A Tompkins & Jerry D Smith (Eds.); Tompkins Associates, Inc.

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Where you know check in the Indian setting many of these trucks above the drivers cabin there is an added enclosure, checkup that place ok. Now, unloaded merchandise is counted and given final inspection products that have come in a pallet some has been stolen. Items at the center of the pallet can be removed, not evident by looking at the pallet check center of the pallet, sample check of some of the pallets we have just mentioned.

Small amounts are missing from the boxes. If consignment is in boxes, cello tape is opened one shampoo bottle taken away, resealed done. So, what are you doing now? We are using tamper evident tapes, means; if you remove the tape the tape will have your company's name on it cello tape, if you remove the tape along with that brown piece of paper will also come away, that means; now nobody can reseal it because that the brown piece of paper it will be evident that has somebody had actually taken it before.

Unloaded merchandise is left in the staging area. So, we have brought in material they will be now taken in the truck, truck goes it was it was a full truck load it has gone, some material is still there, waiting for the second truck to come in and they will load it. Very vulnerable, is the trucker loitering around? Is still there? Is there adequate security?

Unloaded truck ok, unloaded merchandise is left yeah oh. So, so sorry I rephrase it, material has been unloaded, it is lying there. Is the trucker still around? Maybe you can just pass on, something we can just pass on. Unloaded truck still at the loading bay;

unload it has been unloaded still the truck is standing. Who is watching the truck driver? If the truck has to wait, make sure your doors are locked and sealed right then let them wait ok. But you have to very-very careful.

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8. Damaged to the unloaded merchandise is recorded	
Potential Problems	Probable Solutions
Undamaged merchandise is recorded as damaged	Get the manager to check this process Take pictures of the damaged shipment with barcode (if possible)
9. Merchandise stored in proper place in the warehouse	
Potential Problems	Probable Solutions
Merchandise goes missing somewhere between the staging area and storage area	This can be a big problem if you have lot of people walking around. Certain areas should be off-limits. Unpalettised products need to be guarded. Critical and crucial for 'hot' products (clothing, medicines, computer, jewellery)

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The undamaged very important, undamaged merchandise is recorded as damaged. Get the manager to check this process, take pictures of the damage shipment with barcode, if possible very important.

Merchandise goes bit missing somewhere between the staging area and the storage area. It has been unloaded now it is been taken to the racks, in between it has got missing. 200 cartons downloaded or unloaded, 199 cartons in the storage area 1 carton missing, what has happened? This can be a big problem if you have lots of people walking around.

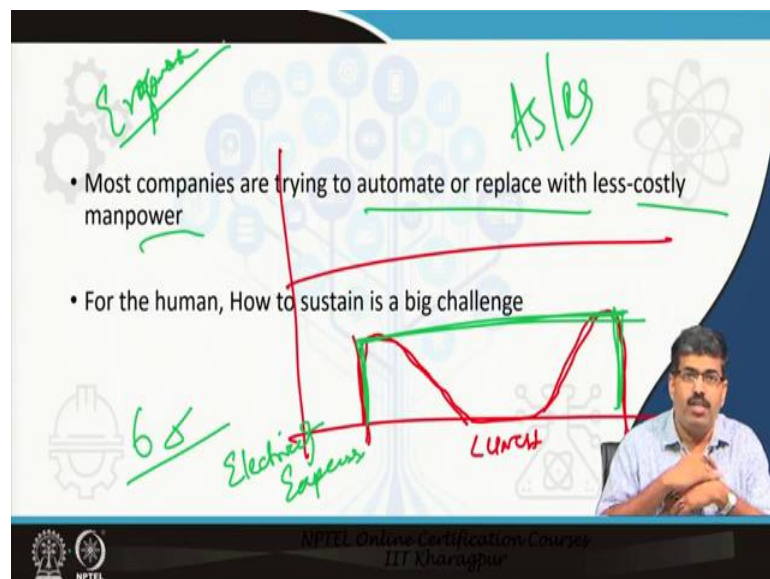
Certain areas should be off – limits, do not allow. Unpalettised products need to be guarded. Critical and crucial for ‘hot’ products we mean; clothing, medicine, computer, jewellery ok. So, sometimes what you done is unpalettised products you put a net ok. So, that people like are very careful with it.

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Now, so, these are areas of theft, you should be very careful. There will be other areas which you will come up with while you are working, this is only a snapshot, but we just gave you some areas which you should be very careful about ok. Now, we come up to another aspect; human aspects in warehousing and materials management ok, human aspects very important.

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We were saying right at the beginning, most companies are trying to automate their systems. Automation means less cost, less recurring cost, uncertainty removed, whether

an employee will cut or come to office today or whether he or she will take leave we do not know. So, uncertainty is removed, less cost and more importantly the machine will perform what it has promised to perform.

If the machine is performing let us say 10 outputs per minute it will keep on performing 10 outputs per minute, but look at the human worker, his productivity is like this, originally right at the morning it is like this, productivity comes down this is the lunch area and then after lunch slowly there is some slumber and then again before going back home the productivity moves up; ok.

So, this is the pattern of productivity if you take this as a line; take this as a line then this looks like it. So, but if you have a machine its productivity for the machine the productivity let us draw it here only for the machine the productivity will be just exactly this; machine productivity will be just exactly like this; right; ok.

So, this so, how will humans sustain this challenge, it is human nature that our productivity will come down it is human nature nothing doing. So, how will humans sustain is a big-big-big challenge; every warehouse today is coming towards something called 6 sigma; every warehouse.

Most warehouses have removed electricity are trying to remove electricity expenses, lightometers put in different corners, they are telling that no here you cannot store a good light is not there, store it there, there is lot of light, the roofs are no more concrete they have areas through which light can pass. Huge warehouse so, during the day they are not having any light at all is natural sunlight ok. So, everywhere we are looking at these problems.

So, automate replace and just look at the AS RS systems that we just now mentioned, AS RS systems is what? Full automation, 0 defect, 0 error. So, we are looking at these systems, humans have so ergonomic problems, ergonomics ok. Ergonomic problems ergonomic work stations, every warehouse the worker should be given a gloves and companies pay for it. Reason; that tomorrow if there is a cut in the palms or hands of the worker the next two days the worker will not come to office come to work. Who loses? The organization loses.

So, in the organizations interest every worker is being given safety equipments, every worker is given insurance, even insurance is to such an extent that, suppose a warehouse will be painted simple a support warehouse is getting painted. Now, there is a contractor who is painting, now the warehouse people will ask; who are your employees or how many people will actually paint the warehouse per day and how many days it will take?

Now, this painter will give a indication; we will take 10 days and every day 5 people. Now, the warehousing agency will take insurance for 5 workers into 10 days because they say that it is better if somebody is severely injured while painting then we lose lot of money, it is better to take insurance.

So, these are certain human aspects that we are all over the world managers are very very worried about. Automation is the answer to cost cutting, but what about the human aspects. So, there is; so there is I would say that brings us to actually more and more we should think of innovation, innovation and innovation ok, unless we innovate and only humans can innovate.

So, innovative methods of warehouse management, you know and now look at it we mentioned about synchronizing demand with supply if that happens, what will happen to our all the workers and staff in the warehouse. The requirement will be reduced to one-tenth. So, we have to think of innovative ways of doing business, innovative ways of storing, warehousing, everything we have to look at all these dimensions.

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• Most companies are trying to automate or replace with less-costly manpower

• For the human, How to sustain is a big challenge

Handwritten notes on the slide:

- $10/3 = 3.33$
- $10/6 = 1.67$
- USL
- 6σ
- 3σ
- 10 min 1 hr

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So, these are areas of concern and as I mentioned most of the warehouses are going towards a 6 sigma. What is 6 sigma? From the mean almost every distribution lies within 3 standard deviations from the mean.

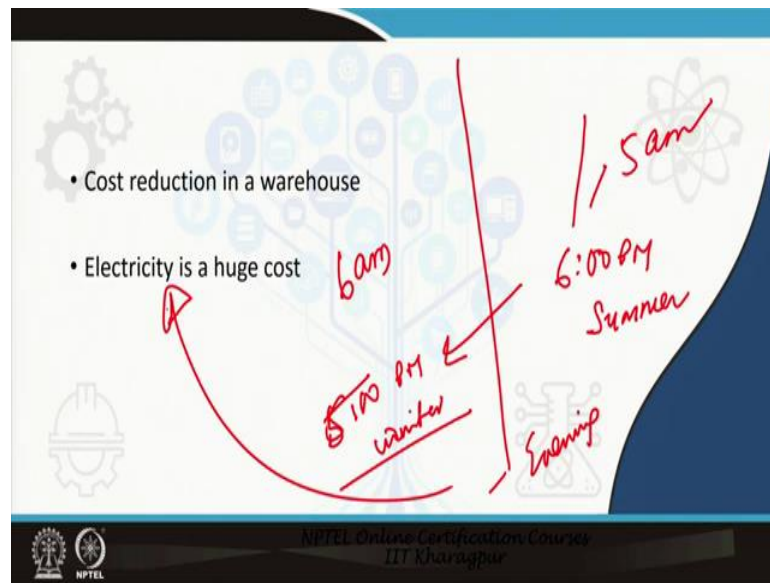
What we are saying is that; no, this is no more 6 sigma. So, this no more 3 standard deviation, this is 6 standard deviation. So, whatever deviation we had, suppose my work time was 1 hour that is 60 minutes with a deviation of 10 minutes right, with the deviation of 10 minutes standard deviation right. Now, we are saying that; no, that 3 standard deviation that is that 10 by 3 my variation I will say deviation my it that is the upper specification limit and lower specification limit ok. The lower specification limit is let us say 10 minutes.

So, my standard deviation is what? 3.33. Now, we are saying that; no, it is not 3.33 anymore, it is 10 divided by 6. So, 1 point how much? 6 6 or 6 7 something whatever it is, I am very poor at division ok. So, now, we are saying this is the standard deviation, upper specification limit; this is the lower specification limit; ok.

So, now, we are saying that this is the standard deviation. So, what are we saying? We are saying [FL] reduce your errors; reduce your chances of errors; reduce your chances of errors where, how to take care of humans in this setting is a great challenge, their sustenance is in question mark.

So, as managers as strategists you should also try to think about innovations, innovative ways of doing business. See, warehouse is a huge fixed cost; no organization wants to incur that. So, as strategies you should look into all these aspects and decide on these models.

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We said cost reduction in the warehouse; electricity is a huge cost we told you, ok. See everywhere else they will start their the shift work shift is changing, earlier it was 3 shifts right 8 hours each. Now, what they are saying is 3 shifts is not allowed, warehouses will stop operating after 6 pm in summer and after 5 pm in the winter, ok. They are saying; no, do not operate after this up to this much ok, because start from morning 6 am to 5 pm, here start from 5 am if required.

If required I am saying, but no working in the evening why? Electricity is a huge cost ok. Why electricity is a huge cost? It is a great problem every warehouse. So, I said as we said the transparent sheds to allow the natural light to fall lightometers; ok. So, these are certain things that you should.

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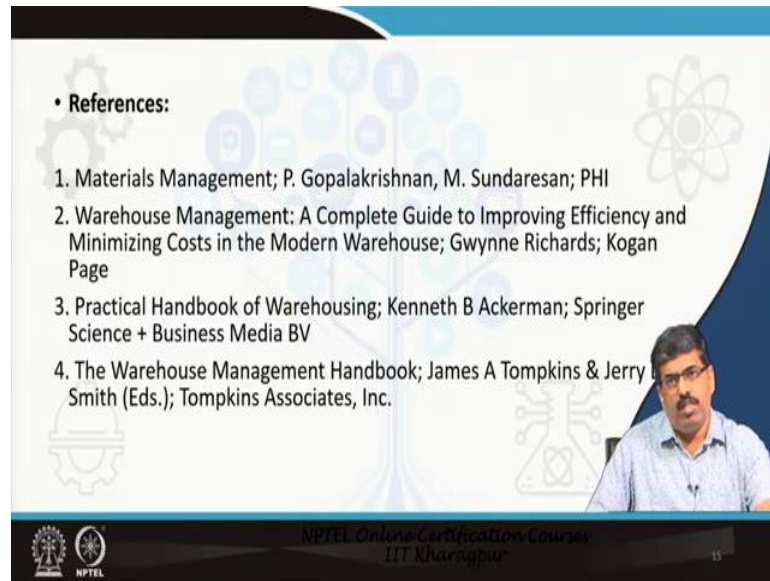
- Offloading work to third party
- Transporters allowed to set up contact point inside the warehouse

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Offloading work to third party, everywhere else any big warehouse you will see the transporters desks are there, transporters allowed to set up contact points inside the warehouse.

Transporter we call them as the transporter desk, it is there any order from the warehouse it is going to the transporter they are coordinating the entire thing, already offloaded to third party. So, we have to think of these dimensions, I am sure with innovative technologies, innovative thinking, innovative systems, we will be able to use our work force in a much-much-much better manner; ok.

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• **References:**

1. Materials Management; P. Gopalakrishnan, M. Sundaresan; PHI
2. Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse; Gwynne Richards; Kogan Page
3. Practical Handbook of Warehousing; Kenneth B Ackerman; Springer Science + Business Media BV
4. The Warehouse Management Handbook; James A Tompkins & Jerry Smith (Eds.); Tompkins Associates, Inc.

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These are the references for this section; ok; with this we complete the module on ‘decision support systems for materials managers’; ok. Next module we will start off with another topic; ok.

So, thank you!