Introduction to Lean Construction
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Module-1
Lecture 31
Sampling/ Surveying Techniques - Foreman delay survey

Welcome everyone. In this session, what we will be covering is some specific survey technique, which is popularly known as Foreman delay survey. This is part of our session on sampling and surveying.

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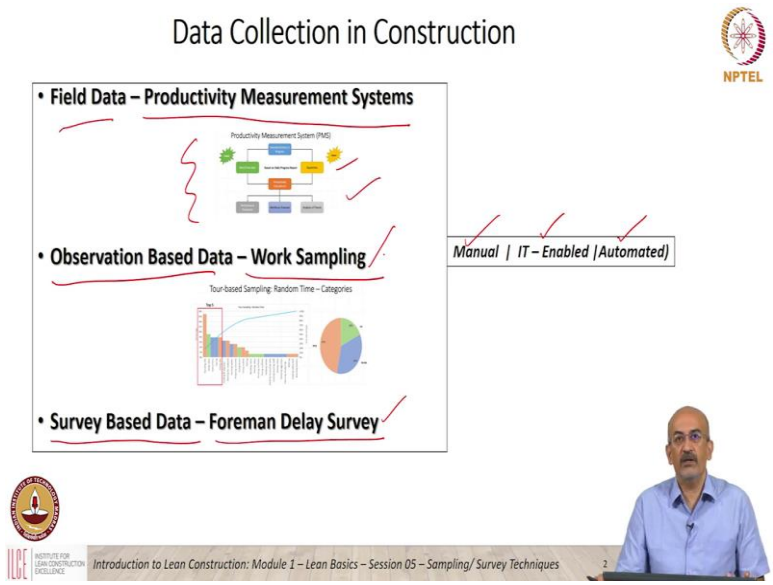

And if we look at it broadly when we look at data collection and construction, we have several different methods to do it. And we have covered, for example, when we look at productivity measurement system, which we covered earlier, it is actually field data, we are actually getting the actual quantities complete, you know, which is output, the input towards the work hours, all this is field data which is going into our system.

So this is one method in which we get data from a construction site. And data is always, I mean, we all know the value of data, data is what makes us understand what is happening, to monitor and to be able to take control and to be able to take decisions on how to take the project forward.

The second method we observed we look towards observation, and we looked at work sampling, where we are getting the data by observation, where you know, it is not the field

data which is collected in numerical form by measurement, but it is by an observer going to site, when we see what is happening and then categorizing it and there again, based on this we are getting, you know, what is the value added? What is non-value added? And we are trying to assess if the site is going on, as planned or do we have to take any corrective actions or do we have to do any more investigations.

Now, the third way in which we can get data is a survey based. Where I am not actually doing getting field data or I am not going to site and doing an observation, but I am asking the people on site to be able to fill in a form or to fill in a survey and to be able to assess what is happening on the site through a survey.

In this session, we are going to cover Foreman delay survey, which is a survey technique, which is very simple, the reason there are many survey techniques available for construction, there are craftsmen surveys, and other types of surveys. But generally the Foreman delay survey or its equivalence and have been found to give quick and reasonably accurate results. And it is also fairly simple to implement, given some conditions are right on site.

Now, we can discuss the context. I think a lot of these techniques were initially formulated with things were very manual. So, whether we are doing productivity measurement or work sampling or Foreman delay survey, there is a manual method to do it, which is still the concepts of based are the same but manual, we can IT-Enabled any of these.

For example, today productivity measurement system, the lot of data is entered on a tablet, or it is entered on some form of a computing platform, which is not pen and paper anymore. Similarly, work sampling can be done with the help of tablets or with smartphones, where, instead of entering data onto a sheet manually, I am doing it on a tablet and all of the information is then processed much faster than if I had to do it manually. Similarly, an FDS can also be the same process, but the entry is electronic.

Now, we could look at all of these systems with more automated forms also. With sensing for example, I could do productivity management with sensing, I could do work sampling with sensing, but when you come to surveys, there is not so much sensing we can do there, but, you know, there is certainly IT- Enabled.

So, I just thought it would be interesting that there are so many methods in which we can get data. We have to look at this each from its perspective, and many of these data kind of sources are independent. And in many projects, what they do is they use at least two types of

source data and try to correlate whether my work sampling, for example, does my work sampling, we discussed this a little bit earlier, best reduction of non-value added proportion increase my productivity or does increasing value added proportion increase my productivity.

So these are questions we should be able to ask and discuss as a part of this, as a part of being able to measure and improve productivity on a site.

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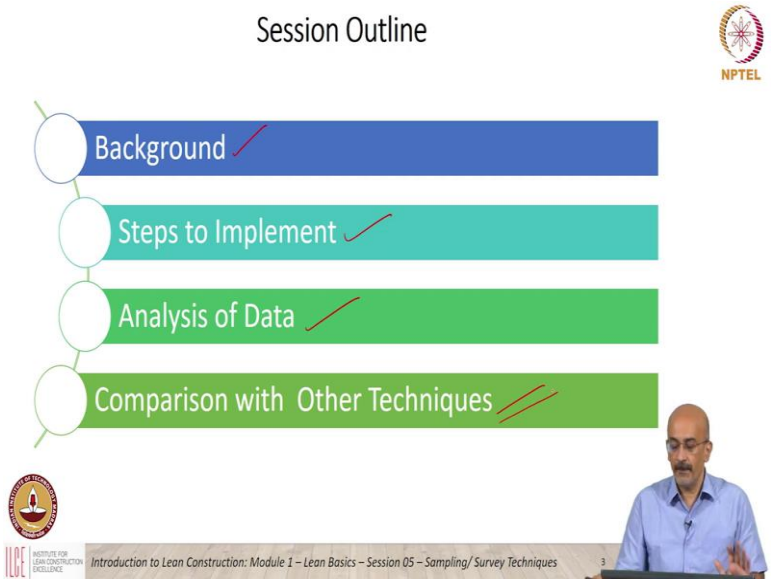

So when we go onto the outline of what we are going to cover, I will cover a little bit of background on the foreman delay survey, the various steps that are taken to implement it, do the analysis of data and then compare it with some of the techniques especially the techniques we discussed earlier. We will do this comparison on different dimensions as an exercise, you know, which would be outside the discussion of this session.

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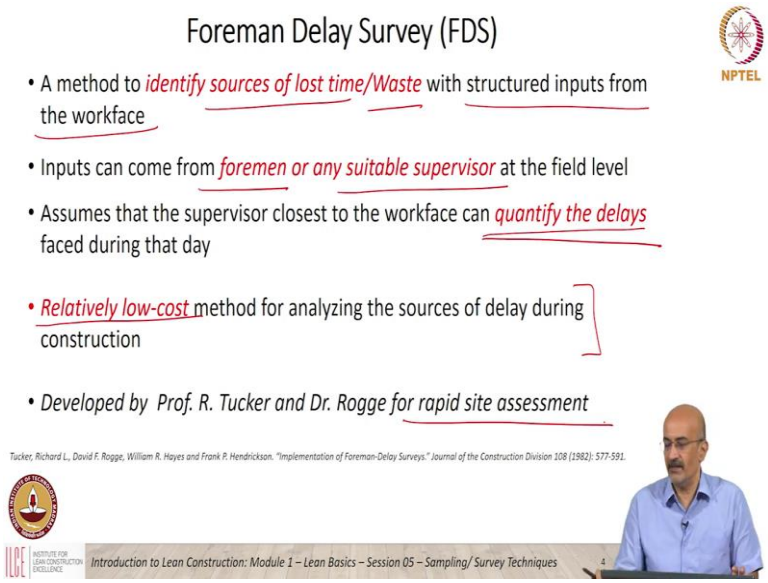

Now coming to Foreman delay survey. So like we looked at all of these tools, are tools which we want to use to identify sources of lost time or waste. And here is a tool, which is a survey, it gets structured inputs from the workface. So this is the way we would like to put, and it is a way of, you know, I can go to a site talk to a foreman get unstructured inputs, and the foreman can say there is delay due to this delay due to that that is unstructured, but still relevant.

What an FDS does is, it gets it in a more structured form where I can do analysis with it. Now the input can come while we use the term foreman, it can come from any suitable supervisor, who is aware of what is happening on site who is aware of the delays, who knows which crew is waiting for what, who is aware of, this was the plan of work for this day, or for this next two-three days, and it did not happen, and knows the reason why it did not happen.

And we also assume that this supervisor can quantify the delays. In many cases, we have found that the supervisor before training, it does not necessarily know how to quantify the delay, but after the formal orientation, they are able to keep an eye out there are even kind of be more conscious about these delays and be able to actually look for them and quantify them in the way we need to be able to take management action. Otherwise, for them, this is how construction takes place. It is a given for them.

But when they have made aware that this is a delay in this category of delay, it gives them a little more ability to think in terms of delays and be able to understand the reasons or and be

able to come and fill the form from a quantification point of view. The other advantage is it is relatively low cost method, because all the resources you have are there.

Unlike work sampling, for example, where you need a team to do work sampling, you need the team to do analysis. The method is your team is already there, your data sources already there, you need to train them a little bit, but definitely get cooperation from them. But beyond that, I mean, it is just one coordinator who needs to be there to be able to motivate them to fill in the forms and coordinate these activities.

This was developed by Professor Tucker and Rogge in the actually in the early 1980s. And for mainly rapid site assessment. So they found that techniques like work sampling or productivity measurement took time, whereas they could go and within a short period with interaction from people find out what the main pain points were. And once they started resolving those pain points, they found that the site was not only able to do much better from a operational point of view, but the people were also motivated to contribute to this exercise.

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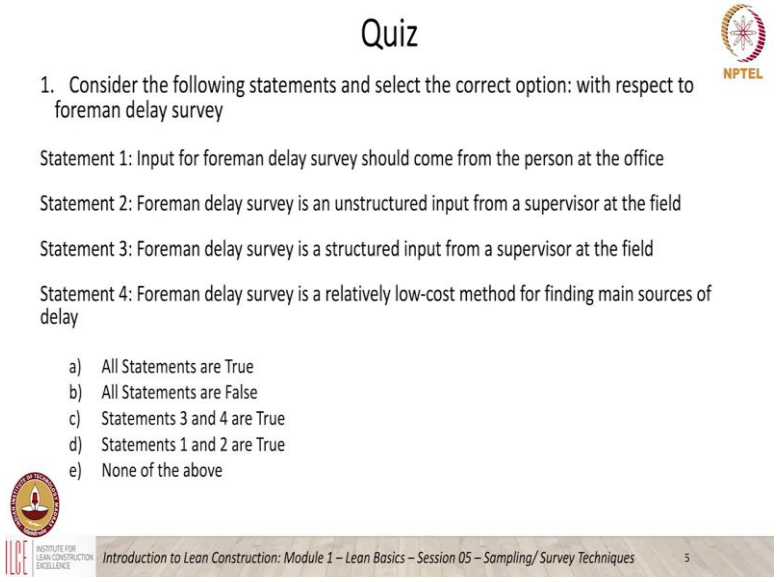

Supplementary Module

Link (to read and contribute)

https://tinyurl.com/yjmab26s