Introduction to Lean Construction
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Module 1, Lecture 23
Factors Influencing Productivity,
Productivity Improvement Approach, Summary

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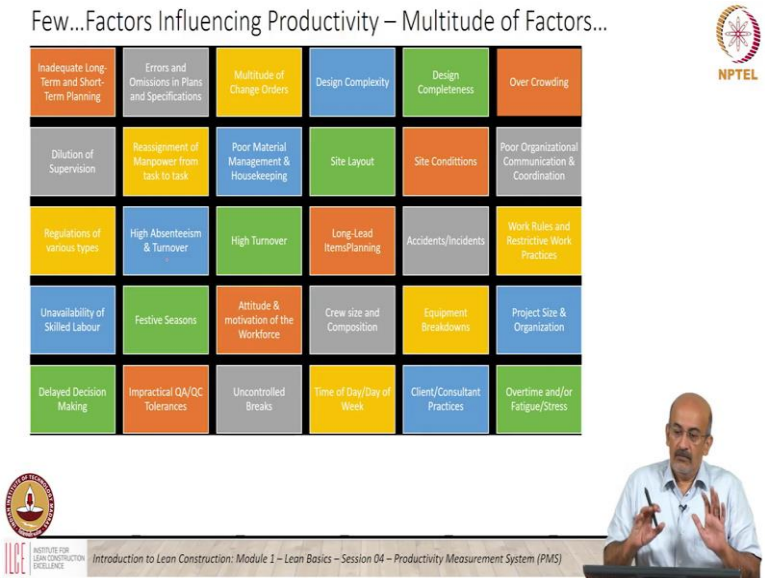

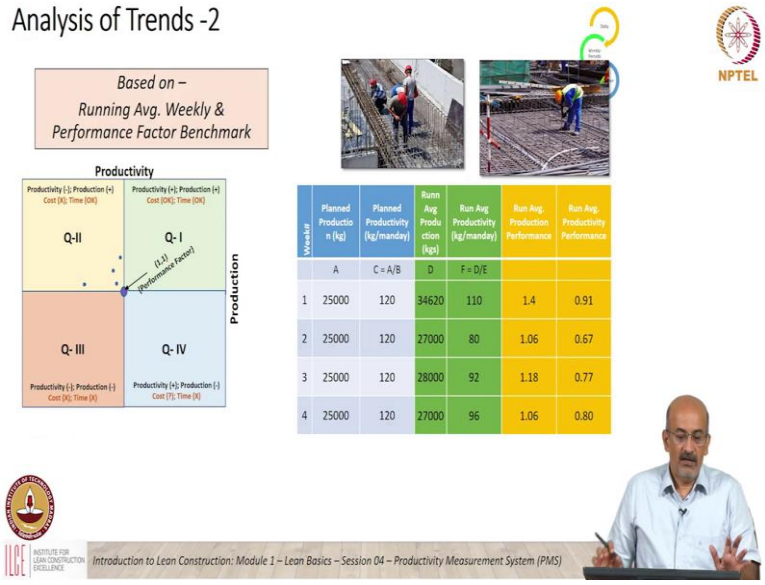

Now, when you go into a situation like this, productivity is not what it should be production is okay, this is typical for our kind of many characters of projects. And we come to the question how do we improve productivity? Where do we, what do we need to address to improve productive? There are a multitude of factors that influence productivity, a few of them are listed here.

We can go through each of these factors, we can have a 5-minute, 10-minute discussion, there is a lot of these factors which influence productivity, but by using a productivity measurement system, and by identifying what factor is hampering my productivity, I can try to remove that factor and facilitate it.

Student: these factors in between also can have some relation so that.

Professor: Absolutely these are not independent, these are interrelated. So, I could show this as an influence diagram. They are all interrelated.

Student: So, you have to think as a system.

Professor: It is a system, it is absolutely a system. So, when we go from a conventional productivity improvement perspective, it is to understand these factors and try to remove these factors, but in the middle of a project manage of a construction project, where there are many issues happening to be able to focus and remove these factors tend to be challenging and so projects do go the way they go. But as data becomes more available to us as analyzing the data becomes more automated, we would be able to focus on the decision making required to try to lessen the impact of these kinds of factors.

Also, the amount of planning we do for example, if we take festive season are high absenteeism and turnover, we cannot, I mean, we have to either plan it, so that these are taken into account or we have to impose control mechanism, so that way bypass it in some form. So, we can take any of these factors and have a detailed discussion. And this is definitely I put this up so that it kind of gives an idea of what the team needs to look at and how we need to be able to evolve systems to be able to improve productivity from a conventional sense.

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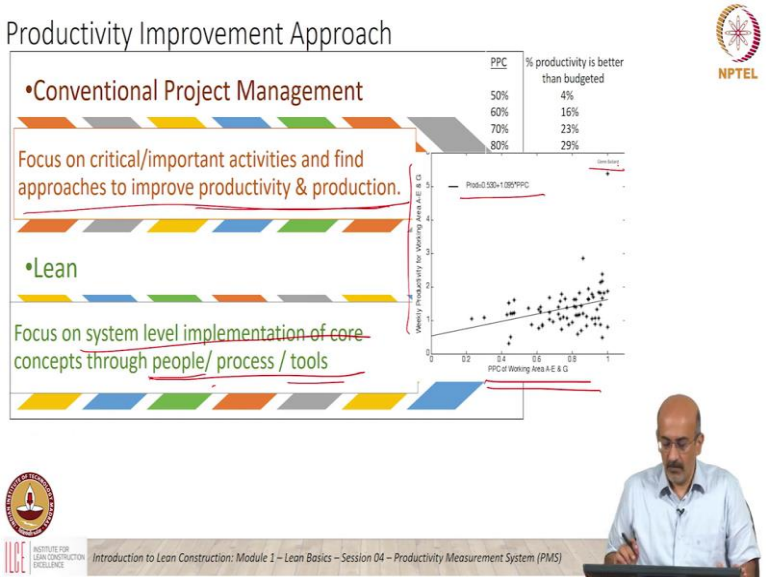

But when we compare conventional with Lean, there are two things which I want to kind of highlight. One is when we do this conventional like we said, we focus on critical important activities, find a project to improve productivity and production. When we take lean, we are definitely interested in productivity and production. But we are not only looking at it from the micro, macro, top-down, bottom up at the metric level, like we did, but we are looking at it overall as a system level.

We are looking at people, process, and tools, we are looking at it at a very, very much broader perspective. But keeping these details in the background and once the broader picture starts falling in place, things like flow and pull, these also start aligning. So, when we take people there are people-oriented aspects in lean, there are process oriented aspects in Lean there are use of tools appropriately if you are lean all of these aligned to improve productivity.

And I think this graph shows it very appropriately. Here we have PPC, which is the last planner metric. And here we have weekly productivity in work areas. So as the PPC increases, the productivity also improves. So, when we look at it from lean, and conventional project management, both are required. Lean enables things in a more system level way.

The conventional project management tools are also very much required. And we look at Project Management from the macro as well as what we are talking from the micro interface. And the project process interface kind of combines with the Lean thinking approach. And all of this is required to take a project successfully.

Student: What does that equation comes to that graph?

Professor: This would be just a linear fit of an equation. That is all, it would they would have just done the linear fit on this equation. So, this would be based on the data. So, this is a study by Glenn Ballard. This would be based on the data which Glenn Ballard at fit out industry.

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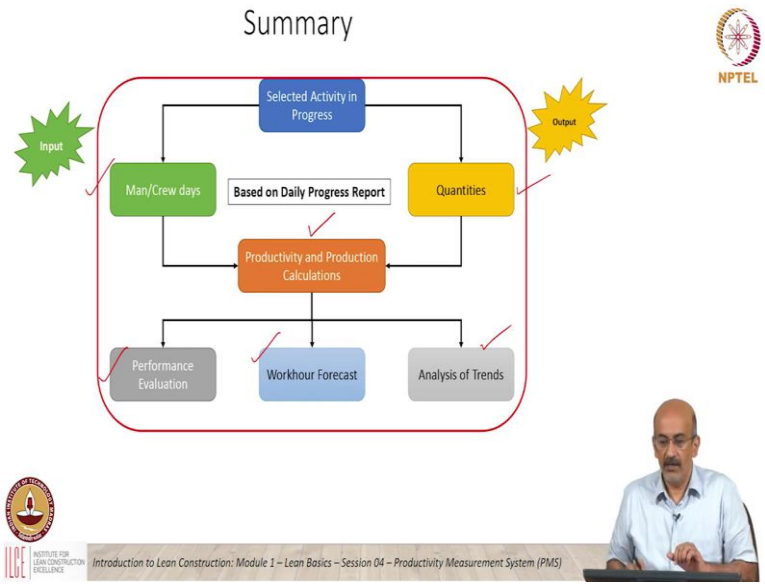

So, there is this is what we basically covered in today's lecture, so if I am not going to summarize it in detail, I am just putting up this figure again to show that we looked at what the inputs are, we looked at how the outputs kind of can get measured, we looked at level of effort here, we looked at performance, we looked at productivity and production calculations, we looked at the various reporting formats.

From basically productivity and production, we looked at performance evaluation, performance factors which made interpretation simpler, we looked at forecasting both from a simple single activity perspective as well as a group activity perspective and we looked at how we analyze trends based on the productivity and production, from a running productivity and production values. So, this basically concludes our sessions on productivity and productivity is the cornerstone. Ultimately, whatever techniques we use, we want productivity on our project.

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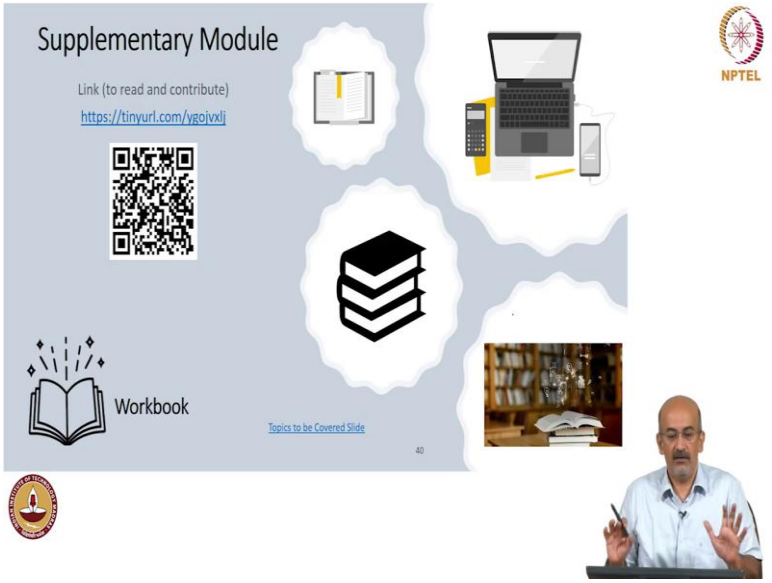

So, there are more supplementary material for reading, the links are given here. And there is also a spreadsheet which kind of illustrates the details of the calculations that are shown here as well as graphs, please refer to that for more information. Thank you.

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