**Introduction to Lean Construction**
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**CPS LPS implementation in Construction Projects through a Panel of Experts - Part 2**

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Professor N. Raghavan: Kalyan, as a coach, you will be having an external perspective, all the actual benefits or otherwise, what have been your experience about the actual benefits.

Mr. Kalyan Vaidyanathan: So I guess, if I were to put sort of, without, at the risk of broad brushing the industry, which is very difficult to do, our experience is that if people adopt the intent of last planner, and after that transition happened, and you resolve that conflict, that Professor Koshy just spoke about, we feel that you can easily hit about a 25 to 40 percent improvement in civil activities, like poor cycle times, just poor civil completion activities.

MEP is a little bit of a bigger challenge, only because there is a lot more integrated coordination that happens there. And there, there is a lot more inter organizational conflict that I mean, if you thought civil was itself a challenge, you are kind of multiplying the challenge by bringing multiple organizations and all that stuff in MEP.

But even there, if you sort of, I mean, we have done some engagements where we have tried to do measure PPCs, and completion times of like a bathroom completion in a commercial

real estate project. And they are also were able to see about 15 to 25 percent improvement in cycle time or reduction in cycle time.

So, when it comes to MEP, it is a bigger challenge, multiply challenge, but the benefits are definitely, really there. I know, we are talking last planner, but the other place where it is a little more easier wins or low hanging fruit, if you will, is wherever you do value stream mapping.

So, Mr. Mohan Babu mentioned root cause, right, where you identify those failures of those root causes, and you do some VSMs, you are able to find some quicker wins. And that kind of boosts, the energy of the team to sort of come back and say, okay, let us adopt this. So, civil MEP and VSM are the three areas that we have broadly seen benefits.

Professor N. Raghavan: Thank you. You mentioned something about, you know, a different way of looking at the benefits, what happens then, other other topic to get more benefits and so on. What do you think, are the enablers? How can we push, you know, the CPS implementation in project sites? so, people are able to get benefits through more easily faster and so on.

Prof Koshy Varghese: So, to me, I look at this from again, going back a bit to the organization level, there is a top down and a bottom up requirement in an organization. When I say top down it means management has to support the process of implementing CPS or LPS.

Management has to look for reports looking at PPC, look at, how did you do constraint analysis, this has to be the top down. The bottom up is your people have to be trained, as Mr. Mohan Babu said they have to learn the language of Lean. They have to understand the language of the Lean. They should be able to enable this requirement from the management to be able to implement the processes, be able to generate those reports be meaningful and take action on it.

So, in general, I would look at it, from both, the management should know, how to make policies which require the CPS based approach to be implemented. And then, the field and the middle management and below should know how to respond to this policy to give meaningful reports to the management.

So, this is the way I would look at. I have I have one more point result. In terms of both LPS and the from the people point of view, I think LPS brings in this concept of a promise of

what, you know, a crew or a team makes a promise and you know why they do not keep it. So, this is something which is also very important as to a lot of times we are very optimistic and how we make promises.

So, at the core level, an LPS system should be, should make us more realistic or be able to take responsibility for promises not kept. And to me this is also a very very core element in, how a team kind of transitions from a regular planning system, where promises are made and probably not kept because of various interrelationships to be able to try to understand where these go wrong and how to keep and understand how promises are kept.

Professor N. Raghavan: Very good. So Kalyan, what has been your experience? What actually pushes you to the implementation of CPS?

Mr. Kalyan Vaidyanathan: So, at an individual site level.

Professor N. Raghavan: As a coach.

Mr. Kalyan Vaidyanathan: Yeah, agree at an individual site level our experience is that if the project manager of the site has not, done not have the belief, whatever be the reason for it, right? He, if he or she thinks, it is the same as LPS, what I am doing is the same as my monthly planning exercise or whatever it is, then it is very difficult to invite that thing at an individual site level.

The next thing is, of course, at the organization level. And there, we feel that unless there is a strong management commitment to almost transform the way, you are doing business, I think we spoke about it. So if, if you are still expecting me to do reports, the way I am supposed to traditionally do, but you are also expecting me to practice, last planner, and any sort of associated discussions and report, it looks like double work.

So, unless you start almost unlearning, or removing parallel systems and processes and sort of aligning everything in one way, and making this the way of life, so to speak, then we feel that, you know, you cannot create that enablers that you want. So, management support at the top project managers' belief. So, the middle people, who have little bit of experience, they should be willing to unlearn to relearn.

And unless that willingness to unlearn is there, when again, I have had experience where the project manager will come and say; do not tell, Kalyan's team, whatever he wants to know.

He is like a spy on to the HO on our behalf. So, that it is a learning experiences, I think that is one thing.

The other thing I would say is when you do scaled implementations, and I have had one experience doing this for Shapoorji, wherein we were told to go to all of their projects in their Bangalore region, and say, I will give you about three weeks to sort of teach them LPS, VSM.

And the metric of measure was, after you have left the site as a coach, how many of them are still practicing. So, success is not what they are doing, when you are there, success is what you are doing after you have left. To be fair, I think we did that in about 6 sites. And at least 3 of them were practicing 3 months later. And of course, we so we, in a sense, we are able to create organizational capacity to learn that and URC is a prime example of it. Shapoorji is another experience that I am talking about.

And the last thing that I would say is, in there are places where we have seen LPS as a firefighting tool, after the project is already in trouble, they will come and hire a consultant and say, Can you fix this loss making project into a profit making project within one month or so? And so that is not the, it has to be a thing that you should bring up front more as a strategy rather than a band aid that you will sort of bring middle course to sort of say that LPS can fix it, kind of LPS cannot fix it. It has to be the strategy that will fix it.

Professor N. Raghavan: So those 6 sites you should have put webcams. So, why bother you heard both these versions of what makes it a success, from the implementation level in the projects, what has been your experience on what makes it click.

Mr. Mohan Babu Subramaniam: In the implementation process, what we face this, first is for the people awareness, that is one thing, because and also, when I am training the people, if my colleagues are more than 20 peoples are trained, will train, but see, people are shuffling, because their transfer to, switch over to other companies.

If other companies, if that transfer are they joint or newly joint, then that company they are not going to be used any LPS and model and all. Okay, but my planning engineers trained 20 peoples, and they in 10 peoples, they went to other organization, but in that other other organization, they are not doing the LPS and all this.

So, that area I am facing the problem because the continuity it is not getting properly the continuity is not get it. Because the peoples are spreading after training. Then I have another

one more challenge. After training, peoples are getting, then the client requirements, see some of the government companies right now like Metros and all, their contract actually they are made these are the requirements are required, like BIM and whatever maybe.

Then my management and my project managers are willing to do that Lean practices and BIM implementations and everything in the contractual manner. So, if you see the 18 sites in the 10 site, it is already in the contract. So, the peoples are implementing for the Lean, BIMs and whatever we are using there. But remaining 8 states like private limited, some owners related real estate projects, then hospital project that area under they are not making any contractual requirements for the BIM or LPS, but still we are practicing that the site also.

But what benefit we got this in that 8 sites, where the Lean is not required that site the client is also supporting. Because there no, there is a transparency in this implementing the Lean, every minutes of meeting previously what happened they made some lot of designs and drawings and everything they are discussing. Now, the constraint log, only they are discussing in the minutes of meeting.

This is what my outcome, because as a Lean practitioner, Lean champion, previously there is a lot of minutes of meeting, there is a format, now the client is asking where is the constraint log, and why this is not a result? And what is the revision date? We have the constraint log I think so in the Lean. So, the project manager and client, I am talking about the, who is not aware of the Lean and contractually it is not deemed that also client is now realized, it is a useful things only. It is very specific problem and we are addressing.

So, the projects also it is going very slow. I think 3-4 in, I told it says the four sites they are selling there, this is very useful for this one. The continuous improvement for this okay, this analysis okay further, then the continuous improvement is quite difficult, because, what we are talking about, we are not talking about the one organization for this Lean implementation.

We are talking about the entire Indian organization. First of all, we should align the organization. You should call all the, like URC you was saying the private limited, like this all the 60, 40 percent private limited companies Director has to be aligned first. So, then only whenever my planning engineer is shifted to other site, that organization also knows this is the, he is the Lean champion.

So, we can hire them, and we can also try for one or two, three sites. So, this way, this will go into spread in India. So, otherwise, it will be very narrow in my 18 sites or maybe 10 to 12

sites only, if it is not contractually deemed. So, this is what I faced. The this is what I think, sir.

Professor N. Raghavan: Thank you. I think I would like to add by experience also this. I think, first of all the top most management, the alignment is very important, I think it is best to get a letter addressed by the CEO, to the project manager on the site, saying thou shall practice Lean and drive the benefits, that goes a long way.

Second thing, the project manager is a very very key person. Unless these are both fully from the bottom of his heart, he should be aligned for practicing Lean. There it works very well. Then third, like you mentioned earlier, the Lean champions you know, you need to have good-trained Lean champions, who know the theory, who can get the other people and how to do that.

And of course, what is the three are properly aligned. All the site people and also been you know, come around to doing that. But the other left, look at the flip side, what do you think are the disablers, you know, what the ones who are preventing the proper then you know, CPS practice at various sites?

Professor Dr. Koshy Varghese: Yeah, I think, I would go back to the point I mentioned earlier, saying I think the biggest disabler is that you will find companies which have established systems, so strongly established systems would want to follow the system and if LPS or CPS is slightly outside the system, the kind of inertia or the resistance to go outside the established system is very strong, because you already have an established system.

So, to me, this is the prime kind of barrier. If you do not have any system like Kalyan mentioned, it is open to you and you can adopt anything then adopting this LPS base system, which is very collaborative, which is fairly trust based, you know, there is a lot of sharing of information going on, this becomes possible.

So, to me, I mean, if you want, I mean that is one then there are definitely other elements that go with it for example, proper training, proper understanding of terminology, practice and training going hand in hand. So, there are several other issues that go along with this too.

Professor N. Raghavan: Okay, thank you, what have been your experience Kalyan, earlier disablers of these sites.

Mr. Kalyan Vaidyanathan: I am going to recharacterize disablers as misalignments with your permission sir. So, I guess the one thing that we find is that so, whatever we do, we would we will be training one entity or one organization in the project, like URC is a contractor or SPCL as a contractor like I mentioned or we work with owners like TRIL, but a project is multiple organizations.

So, until the alignment is done for the project, then you know, you find that somewhere you get stuck, like I mean again I use it since URC is there, I will use URC as an example like URC might be practicing, but their boundary of limits is their contractual boundary. If they tried to create a constraint log or if they tried to pull transparent information from their finishing contractor or their design there might find some resistance there.

So, the project versus the organization is one misalignment, we find. The second thing we find is that, again, not to just to characterize this, so people think of LPS as a process. And our own experience is that after a while, it is more about the culture. I mean, Professor Koshy said that earlier.

So we say that you should recognize that bad news early is good information. That is what constrained logs are. That is what transparency is, right. So unless you are able to create elevate that thing, it is not about the process. It is not about the mechanics of filling out the cultural, the transparent, sorry, the constraint log or the weekly plan.

But it is about the culture of saying that bad news shared early outside, will not have a negative contractual impact on something or me like that. And therefore, I am happy to do it that is the second misalignment. Third is I mean, related to that is the contractor misalignment.

So, our contracts are written with which kind of disallow that transparency. So we are all worried about the LD, more than you are worried about trying to earn the benefits of early completion, if you will. So, that is the third. And the fourth one is a technology, right? A lot of us are talking I mean, I being a technology practitioner, I have to bring technology, everybody is looking at digitization BIM and all that and they all are confused, right?

Is BIM, Lean or is if I practice BIM, am I doing anti Lean or I do not know right? So, there is a little bit of, so unless the technology back ends that we use to enable are also aligned with the Lean Thinking, Lean language that Mr. Mohan Babu was talking about, you find so in our, it to summarize, misalignments are the disablers and misalignments are at the cultural

level, at the process level and at the technology and the contractual level. So, unless I figure out a way to align all of these, there is some friction in the system.