The relationship between different management frameworks and one of the oldest trades in the world, construction is bitter sweet. For the reasons unknown, off late there are so many frameworks which work as suitable with industries other than construction contrary to the kind of activities which take place in construction industry.

Today the infrastructure industry is one of the biggest in the world and it is through this industry that the growth of the country is predicted. More infrastructure projects depict the sound growth of developing countries. Many successful projects means the growth is on the right track and for these projects to be successful one has to implement a framework which looks after time, cost, and scope along with the quality of the project.

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There are many ways to look at these management frameworks, depending upon the complexities of the project. There is waterfall, agile, scrum, lean and so on. Every framework is suitable to a particular level of complexities of projects and has different way to handle the project under varied conditions.

Here is a brief about adopting lean and agile methods into the construction industry.

Why construction should walk lean and go agile?

The challenges which are faced by construction industry are more related to the triple constraint of project management, human resources and lack of policies and procedures for construction management.

It is said that 60% of the projects fail due to

- Cost and time overruns
- Productivity issues
- Coordination problems
- Lack of efficiency
- Lack of defined procedures for project execution and management

Let us look at the possibility to employ lean and agile methodologies to construction to bring all the above challenges under control.

Lean for Construction Industry

Value analysis and value engineering in construction industry is not new. While at the planning process, it is a customary to identify aspects which would add value to the project. Value engineering is a part of lean methodology; apart from that, the system in which all the activities of construction are happening need to be optimized through lean. The flow of information can be created keeping the processes which create value and eliminating those which do not create or adorn with any value to the project. And while working on the deliverables related to value engineering it is necessary to understand the perspective of all stakeholders of the project.

The stakeholders in construction projects can be vendors, contractors and many other agencies which work in collaboration with each other till the end of the project. While applying lean construction it is recommended to initiate early engagement with these stakeholders.

The early engagement of all the stakeholders is also called to be the best practice when lean construction is followed.

While working on the lean construction here are some of the concepts which are to be looked into.

Integrated Project Delivery

As per the Lean Construction Institute, the integrated project delivery should include engagement of stakeholders such as key technical consultants, general contractors, and key sub-contractors but most importantly the architects.
The advantages of integrated project delivery (IPD)

Generally, internal organizational problems and external contractual issues will plague construction projects. Integrated project delivery is the best way of overcoming the same. Apart from that through IPD (Integrated Project Delivery), the project objectives are defined in concurrence with the goals and objectives of the stakeholders, thereby maintaining the transparency and continuing the communication between the team and the stakeholders.

Practical Applications of Lean to construction industry

It is said that lean is mostly used for the manufacturing industry where supply chain management is utmost important. It is through lean that the processes are improved and value addition to the supply chain happens on day to day basis. So, through lean in the manufacturing industry there is a scope and possibility of improvement frequently which conveys the health of the trade. In the contrary, in the construction industries mostly, there is a possibility of repeating same flaws throughout the project and even while repeating the project workflow. These flaws could be operational, or related to the day to day project management activities. Therefore use of lean in the construction industry is recommended.

The Tool for Lean Construction

While working on implementing any management framework, appropriate tools become handy. Last planner system is one such comprehensive tool, which is developed by Lean Construction Institute. The principle of last planner system is simple and is based on

Practically, the basic fundamental of lean and agile varies. Agile is more focussed to deal with the risk based complexities in project framework; lean has its base on the concept of eliminating variation or change.

Agile is known to break the work in such a way that it can be completed in small timely iterations. The purpose of these iterations is to employ the Deming’s wheel (Plan – Do – Check – Act cycle) seamlessly throughout the project.

Implementation of Agile in Construction Industry

As contrary to the agile development, construction projects are linear and are not complex as software projects; but if an attempt is made to strike a similarity between construction and software projects then one can identify that it is towards the field execution part that they resemble with each other.

Agile, helps to minimize the complexities related to the risk and ensures that greatest value is delivered through the project. Risk identification and analysis has a huge role to play in construction industry too.

Here is a brief look at how agile terminologies are similar to construction industry.

What is Agile?

The origin of agile is software development generally evolve through collaborating in between cross functional and self-organizing teams and is said to be heavily influenced by lean principles so by normal logic, when lean can be implemented into the construction industry even agile can.

The explanation about agile can be easily understood through the comparison between lean and agile.
Work Packages

With due regards to the complexities and huge scope of the project it is necessary to break the work into simple units in order to plan, execute and control effectively. This work unit is called as work package in construction and in agile they call it as a user story. The work packages are generally used for planning whereas the user story forms a basis of conversation with stakeholders.

Work completion

The work package completion is the unit of measure when it comes to gauging the work complete, whereas in agile, it’s the completion of user stories which marks the completion of a project.

S curve

The performance baseline in the construction management domain is represented with the S curve which is a graphical representation of cost dispensed over the project duration. This match with a chart called burn up/down chart in agile which helps in monitoring and controlling the scope of the work, time and cost of the project.

Weekly review

In every project despite of the management methodology it is important to have continuous engagement with stakeholders, weekly review meetings with proper agenda helps to keep tab on the project details. While adopting agile methodology, the weekly review meetings can be called as retrospective which serves the same purpose as the weekly review meeting.

During the implementation of agile methodology in any of the projects, the fact remains that agile also is one of the methods which is deduced through the adaptive life cycle of the project. So the fundamentals of project management would actually remain same. The question arises about the applicability of the same to construction projects, decision of which would depend on the returns which agile may give to the construction projects in terms of efficiency, cost management and time management.

Conclusion

Various project management methods are deduced in order to use them for many different projects across industries, but the root of all of them remains same which are the basic fundamental principles of project management. It is always a good exercise to go back to the concepts and understand the cross applicability of each of these frameworks. It would help us leverage their capabilities and applications to many cross functional fields.

While studying all the aspects of these frameworks it is necessary to identify the differences and similarities in order to implement them in the right way. Agile is the software development framework but when it comes to the complexities of execution of software or construction projects, they are alike. There is where the application of agile methodologies to construction projects can be recommended. Through agile the productivity of construction projects can be improved.

Lean is popular in manufacturing industry and off late catching up with the construction industry though there are very few takers.

Using these methods can help incorporating new learnings into the functional fields of construction or software engineering and management.

References


The Sharifi-Ha-House in Tehran built by Iranian design studio NextOffice comes with rooms that rotate at the touch of a button. Customized to provide maximum natural light the rotating boxes was the design studio’s solution to a narrow site, where light would not enter the building on the sides. The height of the seven-story building added to this quandary, and rotating floors helped alleviate the darkness. Occupants circulate between two basement floors, parking on the ground floor, two floors for public activities, and the third and fourth floors for private family life. The rooms can change according to residents’ desires.