

Framework for lean implementation in construction processes

Nilmini Thilakarathna, Otago Polytechnic

Non Value Adding Activities (NVAAs) generated in a construction process are recognized as one of its major weaknesses since they adversely affect its performance and efficiency and produce unwanted cost. Activities that do not add value to the final product are merely a waste and need to be minimized or eliminated altogether. The major reason for our inability to minimize NVAAs is our failure to recognize them. Lean construction is one of the attempts made to apply lean production principles to the construction industry to minimize NVAAs in its construction processes and maximize the value provided to clients. Lean is an innovative construction management approach which is linked closely to the overall life of a project to ensure its success. This paper presents a framework for implementing lean techniques and further propose a tool for determining the lean maturity of a construction project in the construction industry in order to minimize its non-value adding activities. A detailed literature review was carried out to investigate lean implementation in construction processes. Quantitative research techniques were adopted to collect data from three different surveys. Findings of the first survey revealed with examples, the existence of non-value adding activities in construction processes in the construction industry in Sri Lanka with the second survey revealing their level of implementing the lean techniques. The findings of the third survey map non-value adding activities against lean techniques and emphasize the need for developing a framework for implementing lean techniques that will minimize NVAAs in the construction processes. Based on the data collected from the three surveys, a framework for implementing lean techniques and a tool for assessing lean maturity of a construction project were developed. The paper concludes by identifying the most suitable lean techniques in different stages of construction processes that will make them lean with minimum waste thereby ensuring their long term sustainability.