

IMPROVEMENT OF PRODUCTIVITY IN CONSTRUCTION PROJECTS USING A LEAN-DRIVEN SCHEDULING METHOD

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The building and construction sector accounts for more than 4% of New Zealand's Gross Domestic Product (GDP). However, the sector is plagued with problem in poor productivity level. One of the factors which largely affect productivity in construction is variability. This factor accounts for almost 80% of productivity reduction in repetitive construction projects. Variability causes instability in construction performance by introducing fluctuations in daily production, scheduled milestones, and cost. Buffers are commonly used to protect production systems against the variations by allowing a certain level of flexibility. Variability and buffer management are also key topics in the lean construction agenda as reduction in variability can decrease the non-value-adding components in production.

This paper discusses the role of a lean-driven buffered schedule in improvement of productivity in construction. A systematically buffered schedule can improve the reliability of construction plans. The improvement is apparent where considerations are given to the probable non-alignment between the planned and the actual progresses. Consequently, waste in the form of waiting time or slow work can be minimised which addresses the lean ideal requirements. It is shown that a systematic buffered construction schedule can decrease project delivery time between 31% and 41%, and increase productivity level up to 30% when combines with variation control strategies such as "Last Planner System".

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