ABSTRACT

Construction projects frequently experience inefficiencies caused by poor planning reliability, coordination gaps, and workflow disruptions. Lean Construction, particularly through the Last Planner System (LPS), has been introduced to improve planning accuracy and workflow stability in complex construction environments. This study evaluates the implementation of LPS and applies Value Stream Mapping (VSM) to identify inefficiencies and improve workflow performance in the approach work of the Kaligawe Bridge within the Semarang–Demak Toll Road Project (Package 1A). The research employs a descriptive approach supported by qualitative and quantitative data collected through interviews, field observations, and project documentation. Key project data, including Weekly Work Plans (WWP), Percent Plan Complete (PPC), constraint logs, and construction schedules, were analyzed to assess planning performance. VSM was used to map the current construction workflow, identify value-adding and non-value-adding activities, and evaluate process lead time and waiting time. The findings indicate that LPS contributes to improved planning coordination and monitoring through structured weekly planning, PPC evaluation, and routine communication among project stakeholders. However, several limitations remain, particularly related to inconsistent constraint management, design revisions, material approval delays, and limited understanding of Lean principles among subcontractors and field workers. The VSM analysis reveals the presence of non-value-adding activities mainly caused by waiting time, material supply delays, and coordination inefficiencies. This study demonstrates that integrating LPS with VSM provides a practical framework for improving planning reliability and identifying workflow inefficiencies in infrastructure construction projects. The results highlight the importance of stronger stakeholder collaboration, systematic constraint management, and broader Lean Construction implementation to enhance project performance.

Keyword: Lean Construction; Last Planner System; Value Stream Mapping; Percent Plan Complete; Workflow Efficiency; Construction Planning