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Development of A Methodology for Estimating Total Project Duration Using Individual Activity Production Rates

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ABSTRACT

Accurate estimation of project duration is essential for effective planning, scheduling, and resource management in construction and other project-based industries. Conventional project duration estimation methods often rely on historical data, expert judgment, or generalized productivity assumptions, which may not adequately reflect the actual performance of individual project activities. This study presents a methodology for estimating total project duration based on the production rates of individual activities. The proposed methodology involves identifying key project activities, determining their respective production rates, estimating activity durations from work quantities and productivity data, and integrating these durations into an overall project schedule while considering activity dependencies and sequencing. The approach provides a systematic and data-driven framework that improves the accuracy and reliability of project duration estimates. By incorporating activity-specific production rates, the methodology enables project managers to better assess schedule performance, optimize resource allocation, and identify potential delays during the planning stage. The proposed framework can be applied to various construction projects and may serve as a practical decision-support tool for enhancing project scheduling and overall project management efficiency.

Keywords: *Project Duration Estimation, Production Rates, Construction Scheduling, Activity Duration, Project Planning.*