

ANALISIS OPTIMASI *LEAD TIME* PADA MANAJEMEN RANTAI PASOK MATERIAL PRACETAK: STUDI KASUS PADA PROYEK *RAILWAY SYSTEMS* MRT JAKARTA

Deo Prasetyo

Dibawah bimbingan Prof. Dr. Susy Fatena Rostiyanti, ST., M.Sc.

ABSTRAK

Proyek pembangunan MRT Jakarta Fase 2A membutuhkan kecepatan konstruksi tinggi dengan penggunaan material beton pracetak, termasuk *Sleeper*. Namun, rantai pasok material menghadapi kendala lead time akibat birokrasi persetujuan *Manufacturing Quality Plan* (MQP), *hold points* inspeksi, serta ketidaksinkronan jadwal produksi pabrik dengan kesiapan lahan. Penelitian ini bertujuan memetakan rantai pasok material pracetak berdasarkan *Supply Chain Operations Reference* (SCOR), menganalisis alur menggunakan *Value Stream Mapping* (VSM), dan merumuskan strategi optimasi berdasarkan *Process Cycle Efficiency* (PCE). Penelitian menggunakan metode kuantitatif deskriptif melalui studi kasus proyek MRT Jakarta CP205, dengan data *hold time* Februari April 2026 dan wawancara tiga ahli untuk menentukan *re-adjust time*. Hasil menunjukkan proses *Make* mendominasi 60% aktivitas dan 65,77% *hold time* dari total 401,37 jam. VSM mengidentifikasi 11 aktivitas *Value Added* (VA), 8 *Necessary Non-Value Added* (NNVA), dan 1 *Non-Value Added* (NVA), dengan NNVA mencapai 93,96% total lead time. Setelah *re-adjust*, *hold time* turun menjadi 354,36 jam atau 11,7%, sementara PCE meningkat dari 5,98% menjadi 6,11%. FAI menjadi kontributor penghematan terbesar sebesar 63,82%. Lima strategi optimasi diprioritaskan, terutama percepatan FAI dan penyederhanaan tahap *Plan*.

Kata Kunci: *Lead time*, Rantai Pasok, Material Pracetak, *SCOR*, *Value Stream Mapping*.

LEAD TIME OPTIMIZATION ANALYSIS IN PRECAST MATERIAL SUPPLY CHAIN MANAGEMENT: A CASE STUDY OF THE MRT JAKARTA RAILWAY SYSTEMS PROJECT

Deo Prasetyo

Under the supervision of Prof. Dr. Susy Fatena Rostiyanti, ST., M.Sc.

ABSTRACT

The Jakarta MRT Phase 2A construction project requires construction speed and extensive use of precast concrete materials, including sleepers. However, the material supply chain faces lead time constraints due to Manufacturing Quality Plan (MQP) approval bureaucracy, inspection hold points, and misalignment between production schedules and site readiness. This study aims to map the precast material supply chain using the Supply Chain Operations Reference (SCOR) framework, analyze the process through Value Stream Mapping (VSM), and formulate optimization strategies based on Process Cycle Efficiency (PCE). A quantitative method was applied through a case study of the Jakarta MRT CP205 project, using hold time data from February–April 2026 and interviews with three experts to determine re-adjustment time. Results show that the Make process accounts for 60% of activities and 65.77% of hold time (401.37 hours). VSM identified 11 Value Added (VA), 8 Necessary Non-Value Added (NNVA), and 1 Non-Value Added (NVA) activities, with NNVA comprising 93.96% of lead time. After re-adjustment, hold time decreased to 354.36 hours (11.7%), while PCE increased from 5.98% to 6.11%. FAI contributed 63.82% of potential time savings. Five priority strategies emphasize accelerating FAI and simplifying the Plan stage.

Keywords: *Lead Time, Supply Chain, Precast Materials, SCOR, Value Stream Mapping.*