

MODEL MANAJEMEN RISIKO OPERASIONAL KETERLAMBATAN LRT JABODEBEK DENGAN PENDEKATAN ERM–COSO (STUDI KASUS: DATA JULI–SEPTEMBER 2025)

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ABSTRAK

LRT Jabodebek mencatat *On Time Performance* (OTP) 99,62–99,80% pada Juli–September 2025, namun rata-rata keterlambatan perjalanan terus meningkat hingga 1,87 menit, mengindikasikan adanya risiko operasional yang perlu dikelola secara sistematis. Penelitian ini bertujuan mengidentifikasi akar penyebab gangguan, menilai tingkat risiko, menentukan prioritas penanganan, serta merancang model manajemen risiko operasional keterlambatan berbasis *Enterprise Risk Management* (ERM)–COSO *Framework*. Metode yang digunakan meliputi *Fault Tree Analysis* (FTA), *Risk Matrix 4×4*, *risk register*, *heat map*, dan analisis komparatif terhadap data periode Januari–Maret 2026. Hasil penelitian menunjukkan bahwa gangguan integrasi sistem merupakan kategori paling dominan. Penilaian risiko menghasilkan lima risiko kategori *High*, yaitu *No Green Icon* (NO GI), *ATP Cross*, *Power Trip 750 VDC*, *Selang Bocor*, dan *EB Derailment Detected*. Model yang dirancang terdiri atas enam tahapan siklus yang sistematis dan adaptif. Analisis komparatif mengonfirmasi kelima risiko prioritas masih relevan pada periode terbaru, dengan NO GI tetap paling dominan.

Kata Kunci: LRT Jabodebek, manajemen risiko operasional, ERM–COSO, *Fault Tree Analysis*, *Risk Matrix 4×4*, keterlambatan operasional

***OPERATIONAL RISK MANAGEMENT MODEL FOR JABODEBEK
LRT DELAYS USING THE ERM-COSO APPROACH (CASE
STUDY: JULY–SEPTEMBER 2025 DATA)***

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ABSTRACT

LRT Jabodebek recorded On Time Performance (OTP) of 99.62–99.80% during July–September 2025; however, average travel delays increased progressively to 1.87 minutes, indicating operational risks requiring systematic management. This study aims to identify root causes of disruptions, assess risk levels, determine treatment priorities, and design an operational delay risk management model based on the Enterprise Risk Management (ERM)–COSO Framework. Methods employed include Fault Tree Analysis (FTA), a 4×4 Risk Matrix, risk register, heat map, and comparative analysis against January–March 2026 operational data. Results show that system integration disruptions constitute the most dominant category. Risk assessment identified five High-category priority risks: No Green Icon (NO GI), ATP Cross, Power Trip 750 VDC, Leaking Hose, and EB Derailment Detected. The proposed model comprises six systematic and adaptive cyclical stages. Comparative analysis confirms that all five priority risks remain relevant in the latest period, with NO GI persisting as the most dominant disruption.

Keywords: *LRT Jabodebek, operational risk management, ERM–COSO, Fault Tree Analysis, 4×4 Risk Matrix, operational delay*