

ABSTRAK

Nama : Siti Nurul Afina
Program Studi : Teknik Elektro
Judul : Analisis *time overrun* dan solusi penyelesaian menggunakan *framework* DMAIC pada proyek instalasi listrik lantai 8 mall X

Time overrun merupakan salah satu permasalahan yang memengaruhi kinerja waktu proyek konstruksi. Penelitian ini bertujuan mengidentifikasi faktor-faktor penyebab *time overrun*, menganalisis penyimpangan jadwal menggunakan *Earned Value Management* (EVM), serta menyusun alternatif penyelesaian melalui penerapan *Critical Path Method* (CPM) dalam kerangka *Define, Measure, Analyze, Improve, and Control* (DMAIC) pada proyek instalasi listrik Lantai 8 Mall X. Penelitian menggunakan pendekatan *mixed methods* dengan analisis *Schedule Variance* (SV), *Fishbone Diagram*, simulasi CPM, dan penyusunan *Standard Operating Procedure* (SOP). Hasil penelitian menunjukkan bahwa penyebab *time overrun* terdiri atas faktor Design, Material, Management, Method, dan Man, dengan faktor dominan Design, Material, dan Management yang masing-masing memiliki frekuensi kemunculan sebesar 100%, diikuti Method sebesar 75% dan Man sebesar 50%. Analisis EVM menunjukkan proyek mulai mengalami penyimpangan jadwal pada minggu ke-11, dengan nilai SV sebesar -12,44% pada target penyelesaian minggu ke-17, sehingga progres aktual hanya mencapai 87,56% dan proyek baru selesai pada minggu ke-20. Simulasi menggunakan CPM menghasilkan jalur kritis A-B-D-H-K-N-O dengan durasi proyek 103 hari kerja atau sekitar 15 minggu. Dibandingkan dengan penjadwalan eksisting yang disusun berdasarkan pengalaman tanpa metode penjadwalan terstruktur selama 17 minggu, penerapan CPM berpotensi meningkatkan efektivitas penjadwalan dengan durasi rencana sekitar 2 minggu lebih singkat. Penelitian ini juga menghasilkan usulan penerapan *Critical Path Method* (CPM) sebagai metode penyusunan jadwal proyek serta *Standard Operating Procedure* (SOP) pengendalian kinerja waktu proyek sebagai pedoman monitoring dan pengendalian waktu untuk meminimalkan potensi *time overrun* pada proyek sejenis.

Kata kunci: *Time Overrun, DMAIC, Earned Value Management (EVM), Critical Path Method (CPM), Schedule Variance, SOP Pengendalian.*

ABSTRACT

Name : Siti Nurul Afina
Study Program : Electrical Engineer
Title : Analysis of Time Overruns and Mitigation Solutions Using the DMAIC Framework in the 8th-Floor Electrical Installation Project at Mall X

Time overrun is one of the most critical challenges affecting schedule performance in construction projects. This study aims to identify the factors contributing to time overruns, evaluate schedule deviations using Earned Value Management (EVM), and propose improvement strategies through the implementation of the Critical Path Method (CPM) within the Define, Measure, Analyze, Improve, and Control (DMAIC) framework for the electrical installation project on the 8th Floor of Mall X. A mixed-methods approach was employed using primary data collected through interviews with the Project Manager, Site Engineer, Supervisor, and Quality Control personnel, as well as secondary data obtained from the project schedule, S-curve, and project progress reports. The analysis was conducted using Schedule Variance (SV), Fishbone Diagram, CPM simulation, and the development of a Standard Operating Procedure (SOP). The results indicate that the factors contributing to time overruns consist of Design, Material, Management, Method, and Man, with Design, Material, and Management identified as the dominant factors, each having an occurrence frequency of 100%, followed by Method at 75% and Man at 50%. The EVM analysis revealed that schedule deviations began in the 11th week, with a SV of -12.44% at the planned project completion in the 17th week, indicating that the actual project progress reached only 87.56% of the planned progress, resulting in project completion being delayed until the 20th week. As an improvement strategy, the CPM simulation identified the critical path A–B–D–H–K–N–O with a total project duration of 103 working days, or approximately 15 weeks. Compared with the existing schedule, which was developed based on practical experience without applying a structured scheduling method and had a planned duration of 17 weeks, the application of CPM demonstrated the potential to improve scheduling effectiveness by reducing the planned project duration by approximately 2 weeks. Furthermore, this study proposes the

implementation of the Critical Path Method (CPM) as a project scheduling method and develops a Standard Operating Procedure (SOP) for Project Schedule Performance Control as a guideline for project schedule monitoring and control to minimize the potential for time overruns in similar construction projects.

Keywords: *Time Overrun; Define, Measure, Analyze, Improve, and Control (DMAIC); Earned Value Management (EVM); Critical Path Method (CPM); Schedule Variance (SV); Standard Operating Procedure (SOP) for Project Schedule Performance Control.*