OPTIMALISASI LEAD TIME PROSES TENDER PENGADAAN BARANG DAN JASA DI PT. XYZ MENGGUNAKAN SISTEM DINAMIK

Ilma Zuraida Maharani Hasibuan

ABSTRAK

Proses tender pengadaan di PT. XYZ masih menghadapi permasalahan berupa lead time yang melebihi target Service Level Agreement (SLA) perusahaan sebesar 38 hari. Penelitian ini bertujuan mengidentifikasi faktor-faktor yang memengaruhi lead time proses tender, menganalisis hubungan antarvariabel menggunakan pendekatan sistem dinamik, serta menentukan skenario perbaikan yang paling efektif. Penelitian dilakukan melalui tahapan identifikasi masalah, penyusunan *Causes Tree*, *Causal Loop Diagram* (CLD), *Stock Flow Diagram* (SFD), formulasi model, verifikasi, validasi, dan simulasi skenario menggunakan perangkat lunak Vensim. Hasil validasi menunjukkan model telah memenuhi kriteria dengan nilai Mean Comparison (E1) < 5% dan Error Variance (E2) < 30%. Faktor-faktor yang memengaruhi lead time meliputi Lead Time Bid Creation, Bid Opening, Evaluasi Administrasi, Evaluasi Teknis, Approval, dan Proses Lainnya. Tiga skenario perbaikan yang dikembangkan adalah Integrasi e-Procurement, Monitoring Tender Aktif dan Update Database Vendor, serta Skenario Gabungan. Hasil simulasi menunjukkan bahwa Skenario Gabungan merupakan alternatif terbaik dengan menurunkan rata-rata Total Lead Time Tender dari 91,7 hari menjadi 61,4 hari atau sebesar 33%, meskipun hasil tersebut masih berada di atas target SLA perusahaan. Hasil tersebut menunjukkan bahwa Skenario Gabungan dapat menjadi langkah awal dalam meningkatkan efisiensi proses tender di PT. XYZ, namun diperlukan pengembangan kebijakan lebih lanjut dan optimalisasi faktor-faktor lain yang berkontribusi terhadap *lead time* untuk mencapai target SLA perusahaan.

Kata Kunci: Sistem Dinamik, Pengadaan Barang, Tender, *Lead Time*, Vensim.

OPTIMIZING THE LEAD TIME OF THE PROCURENT TENDER PROCESS AT PT. XYZ USING SYSTEM DYNAMICS

Ilma Zuraida Maharani Hasibuan

ABSTRACT

The procurement tender process at PT. XYZ still experiences excessive lead time, exceeding the company's Service Level Agreement (SLA) target of 38 days. This study aims to identify the factors affecting procurement tender lead time, analyze the causal relationships among variables using the System Dynamics approach, and determine the most effective improvement scenario. The research employed problem identification, Causes Tree, Causal Loop Diagram (CLD), Stock Flow Diagram (SFD), model formulation, verification, validation, and scenario simulation using Vensim software. The validation results indicate that the model is valid, with Mean Comparison (E1) < 5% and Error Variance (E2) < 30%. The main factors influencing lead time include Bid Creation, Bid Opening, Administrative Evaluation, Technical Evaluation, Approval, and Other Processes. Three improvement scenarios were developed: e-Procurement Integration, Active Tender Monitoring and Vendor Database Update, and a Combined Scenario. Simulation results show that the Combined Scenario provides the best performance by reducing the average Total Tender Lead Time from 91 days to 61,4 days, representing a 33% reduction, although the result remains above the company's SLA target. These results indicate that the Combined Scenario can serve as an initial step toward improving tender process efficiency at PT. XYZ; however, further policy development and optimization of other contributing factors are required to achieve the company's SLA target.

Keywords*: System Dynamics, Procurement, Tender, Lead Time, Vensim.*