

ABSTRAK

Bernadette Christin (01629190003)

PEMODELAN RISIKO BIAYA KONTINGENSI PADA PROYEK EPC PIPELINE MENGGUNAKAN SIMULASI MONTE CARLO

Tesis, Fakultas Sains dan Teknologi (2021)

(xiv + 96 halaman: 17 gambar; 24 tabel; 9 lampiran)

Model kontrak EPC yang diberikan oleh pemilik proyek kepada kontraktor dalam pembangunan jaringan pipa membuat risiko yang ditanggung kontraktor menjadi semakin besar. Kesalahan dalam mengidentifikasi risiko saat perhitungan biaya kontingensi dapat mengakibatkan *cost overrun*. Berdasarkan rumusan permasalahan untuk membuat pemodelan risiko biaya kontingensi pada proyek EPC pipeline, dilakukan penelitian dengan metode kualitatif serta analisis data berdasarkan *probability-impact matrix*, program statistik SPSS versi 25 dan Crystal Ball versi 11.1.2.4. Terdapat lima faktor risiko yang sangat mempengaruhi biaya kontingensi proyek, yaitu perubahan ruang lingkup pekerjaan (*engineering*), keterlambatan ijin dari pemerintah atau pihak regulasi (*construction*), masalah masyarakat lokal dan lingkungan proyek (*construction*), keterlambatan pekerjaan konstruksi (*construction*) dan keterlambatan pengiriman material *long lead items* (*procurement*) yang dapat direspon dengan pemahaman yang baik atas ruang lingkup dan kondisi proyek, melakukan identifikasi jenis ijin serta waktu yang dibutuhkan untuk memperolehnya, melakukan identifikasi kebutuhan masyarakat dan lingkungan proyek serta sosialisasi sebelum dan saat proses konstruksi, melakukan koordinasi dan monitoring pekerjaan secara berkala serta melakukan seleksi vendor material dan jasa pengiriman. Dengan metode Simulasi Monte Carlo maka Proyek X dapat dilaksanakan dengan menambahkan biaya kontingensi sebesar 14,87% atau USD 5.681.216,18. Manajemen terhadap risiko dan Simulasi Monte Carlo dapat digunakan untuk memperoleh perhitungan risiko biaya kontingensi yang lebih akurat.

Kata kunci: Manajemen risiko, biaya kontingensi, proyek EPC *pipeline*, simulasi monte carlo

Referensi: 73 (1993-2021)

ABSTRACT

Bernadette Christin (01629190003)

CONTINGENCY COST RISK MODELING IN THE EPC PIPELINE PROJECT USING MONTE CARLO SIMULATION

Thesis, Faculty of Science and Technology (2021)

(xiv + 96 pages: 17 figures; 24 tables; 9 appendices)

One of the supports on government programs in increasing the use of natural gas is the pipeline's construction as natural gas transporting. The EPC contract model given by KKKS to contractors in the pipeline's construction magnify the risks borne by contractors. Errors in identifying risk during calculating contingency costs can result in cost overruns. Based on the problem formulation for modeling the contingency cost risk of EPC pipeline project, qualitative research and data analysis based on probability-impact matrix, SPSS statistical program version 25 and Crystal Ball version 11.1.2.4 was conducted. Based on the research result, there are five risk factors that greatly affect the project contingency cost, namely changes in the scope of work (engineering), delays in permits from the government or regulatory (construction), problems with local communities and the project environment (construction), delays in construction work (construction) and delays in long lead items material delivery (procurement) that can be responded with a good understanding of the scope and conditions of the project, identification of the permit and time required to obtain them, identification on the needs of community and the project environment and conduct the socialization before and during construction, conduct regular coordination and monitoring of the work performance and perform selection on material and forwarder vendor. With the Monte Carlo Simulation method, Project X can be implemented by adding contingency as much as 14,87% or USD 5.681.216,18. Risk management and Monte Carlo Simulation can be used to obtain a more accurate calculation of contingency cost risk.

Keywords: Risk management, contingency cost, EPC pipeline project, monte carlo simulation

References: 73 (1993-2021)