

ABSTRAK

Ada tiga faktor yang mempengaruhi keberhasilan dan kegagalan pada suatu proyek yaitu waktu, biaya dan mutu. Proyek dikatakan berhasil dilihat dari waktu penyelesaian yang singkat dengan biaya yang minimal tanpa meninggalkan mutu hasil pekerjaan. Oleh karena itu, dalam perencanaan proyek konstruksi hal penting yang harus dioptimasi adalah dari segi waktu dan biaya. Dengan mengontrol waktu dan biaya maka proyek konstruksi akan mendapatkan keuntungan yang besar dan menghindarkan dari adanya denda akibat keterlambatan proyek. Tujuan dari penelitian ini adalah untuk mengetahui perubahan biaya dan waktu pelaksanaan proyek dengan variasi penambahan jam kerja dan penambahan alat berat, membandingkan antara biaya denda dengan biaya penambahan jam kerja serta penambahan alat berat.

Data-data yang digunakan pada penelitian ini berasal dari data Proyek Pembangunan Jembatan Grindulu, Kabupaten Pacitan, Jawa Timur. Analisis menggunakan program Microsoft Project 2010 dan metode Time Cost trade Off. Lintasan kritis dan kenaikan biaya akibat dari penambahan jam kerja didapat dari analisis program Microsoft Project 2010, sedangkan percepatan durasi didapat dari hasil analisa metode Time Cost trade Off.

Hasil dari penelitian ini adalah (1) Waktu dan biaya total proyek pada kondisi normal sebesar 990 hari dengan biaya Rp. 184.663.854.562,74. Penambahan 1 jam kerja lembur didapat durasi 851 hari dengan biaya Rp. 182.830.533.024,93. Penambahan 2 jam kerja lembur didapat durasi 750 hari dengan biaya Rp. 181.539.780.678,18. Penambahan 3 jam kerja lembur. didapatkan durasi 675 hari dengan biaya Rp. 180.631.441.598,37. (2) Penambahan alat 1 didapatkan durasi 851 hari dengan biaya Rp. 182.770.078.398,19. Penambahan alat 2 didapatkan durasi 750 hari dengan biaya Rp. 181.408.585.758,90. Penambahan alat 3 didapatkan durasi 675 hari dengan biaya Rp. 180.393.531.853,74. (3) Penambahan lembur 1 jam lebih efektif jika dibandingkan dengan penambahan alat 1. Penambahan alat 2 lebih efektif jika dibandingkan dengan penambahan lembur 2 jam. Penambahan alat 3 lebih efektif jika dibandingkan dengan penambahan lembur 3 jam. (4) Berdasarkan penambahan jam lembur dengan penambahan alat yang paling efektif adalah penambahan alat 3, dikarenakan pada penambahan alat 3 menghasilkan biaya termurah sebesar Rp. 180.393.531.853,74 dengan durasi 675 hari. (5) Biaya mempercepat durasi proyek pada penambahan jam lembur atau penambahan alat lebih murah dibandingkan dengan biaya yang harus dikeluarkan apabila proyek mengalami keterlambatan dan dikenakan denda.

Kata kunci: *Microsoft Project, Time Cost Trade Off, Penambahan jam kerja (lembur), Penambahan alat berat*

ABSTRACT

There are three factors that influences the succesfull and failure of the project construction, there are time, cost, and quality. The project is succesfull if the time completion of project with the minimum cost without ignore the quality of project result. Therefore, the important things in the construction project planning need to optimize are time and cost. By controlling the time and cost of the construction project will achieve the highest profit and avoids the penalties due to the project delays. The purpose of this study is to know the changes of cost and time of implementation project with variety of additional working time and additional heavy equipment comparing between cost of penalties to additional of working time cost and additional of heavy equipment cost.

The data used in this study according to contruction project of Grindulu Bridge, Pacitan, East Java. Analysing data using Microsoft Project 2010 and Time Cost Trade Off Method. The critical path and cost increase according to additional working time obtained from analysis program of Miscrosoft Project 2010, whereas the acceleration of duration obtained from analyzing Time Cost Trade Off method.

The results of this study are (1) the total cost and time of project in normal condition is 990 days with total cost Rp. 184.663.854.562,74. Additional of 1 hour overtime working obtained the duration of 851 days with total cost Rp. 182.830.533.024,93. Additional of 2 hours overtime working obtained the duration of 750 days with total cost Rp.181.539.780.678,18. Additional of 3 hours overtime working obtained the duration of 675 days with total cost Rp.180.631.441.598,37. (2) Additional equipment of 1 obtained the duration of 851 days with total cost Rp 182.770.078.398,19. Additional equipment of 2 obtained the duration of 750 days with total cost 181.408.585.758,90. Additional equipment of 3 obtained the duration of 675 days with total cost of Rp. 180.393.531.853,74.(3) Additional of 1 hour overtime working is more effective compared to additional equipment of 1. Additional equipment of 2 is more effective compared to additional of 2 hours overtime working. Additional equipment of 3 is more effective compared to additional of 3 hours overtime working. (4) According to additional overtime working compared to additional equipment show that additional equipment of 3 is more effective because produces the minimum cost Rp. 180.393.531.853,74 with the duration of 675 days. (5) Cost of the acceleration time of project in additional overtime working or additional of equipment are less expensive compared to the cost of penalties payment due to the project delays.

Keywords: *Microsoft Project, Time Cost Trade Off, Additional of Work Overtime, Additional of Heavy Equipment*