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STUDY OF PROJECT TIME AND COST PERFORMANCE USING THE EARNED VALUE MANAGEMENT METHOD ON THE ENVIRONMENTAL ROAD IMPROVEMENT PROJECT IN TANIPAH VILLAGE, MANDASTANA DISTRICT

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ABSTRACT

One of the methods used in controlling project time and costs is the earnedvalue concept method. Earned value is a concept of calculating the cost budget by the work that has been completed. Where performance is measured is work completed at a certain time, which is assessed based on the amount of budget available on the project. For this reason, it can later be known the relationship between the physical progress achieved and the budget that has been spent.

In this study, the object of research used was the Tanipah Village Environmental Road Improvement project, Mandastana District, and used existingdata, namely general project data, contract value, schedule, and weekly reports. This study uses project performance analysis based on time and cost using the Earned Value Management method.

The results of the data analysis obtained were that there was a delay in project work in week 1 and week 2, but scheduling performance improved so that in the following week there were no more delays and the project was completed ontime. In terms of costs, in week 1 to week 7 the costs incurred exceeded the budgetbut in week 8 cost performance improved and in the last week the profit obtained amounted to Rp. 40,207,776.

Keywords: *Earned Value, Cost, Time*

INTRODUCTION

Time and cost management plans are part of overall construction management. Apart from quality, project performance can also be evaluated in terms of scheduling and cost. The costs incurred as well as the time used to complete the project must continue to be checked according to plan. The significant differences in plan schedule and costs indicate poor project management. By providing project performance metrics in terms of cost and time, contractors can take action to ensure that project work is carried out according to plan.

In the process of improving environmental roads in Tanipah Village, Mandastana District, the contractor used the S curve as a tool for project control. The Tanipah Village Road Improvement project experienced delays in weeks 1 and 2, but the project was completed faster than planned. Based on the S curve data for the Tanipah Village Environmental Road Improvement project, it can only be known every week whether the progress of the work is delayed, on time, or faster than planned. However, by analyzing the value of the results method, performance can be seen in terms of costs and it can be seen whether the project work is to the plan or not, even though the S curve is delayed, on time, or faster.

1. THE ORETICAL FOUNDATION

Earned Value Indicators

According to (Danto, 2016) in determining project performance using *Earned Value*, the information displayed is in the form of quantitative indicators, which display information on the progress of project costs and schedules. The *Earned Value* indicators are as follows:

1. *Budgeted Cost for Work Scheduled* (BCWS) / *Planned Value* (PV)

Budgeted Cost for Work Scheduled (BCWS) is a cost calculated from the accumulated budget of planned costs for work in a certain period. BCWS is also a benchmark for the time performance of project implementation.

2. *Budgeted Cost of Work Performance* (BCWP) / *Earned Value* (EV)

Budgeted Cost of Work Performance (BCWP) is a project plan budget for a certain period against what has been done at the actual volume of work. BCWP is often called earned value.

3. *Actual Cost of Work Performed* (ACWP) / *Actual Cost* (AC)

Actual Cost of Work Performed (ACWP) is the actual budget issued for the execution of work in the state of actual work volume in a certain period. (Yuliana et al., 2019)

2. RESEARCH METHODOLOGY

In this analysis, the Earned Value Management Method and the Cash Flow Method are used. The Earned Value Management method is to obtain results in the form of project analysis in the form of actual project cost and schedule status, where the results of this analysis are obtained based on secondary calculations which are processed into an indicator. The Cash Flow method is used to determine the receipt and expenditure of costs during project implementation.

3. RESULTS AND DISCUSSION

From the data processing that has been carried out, it will be seen how the scheduling performance and project cost performance in the implementation of the Tanipah Village Environmental Road Improvement Project, Mantastana District until completion. The results of the *Cash Flow* analysis can be known as the loans needed, profits, and losses obtained by the contractor.

Project Data Analysis Results

The results of the data analysis on the Environmental Road Improvement Poyek of Tanipah Village, Mandastana District can be concluded as follows:

1. Scheduling performance based on SV and SPI data found that in week 1 and week 2 the project experienced delays from the planning schedule. In week 3 to week 11, the project was carried out ahead of schedule. In week 12 the SV value shows zero and SPI shows 1, meaning that the project is completed according to plan.

2. Cost performance based on CV and CPI data found that from week 1 to week 7 the project experienced cost overruns. However, for the following weeks, cost performance improved. In this project work earned a profit of Rp. 40,207,776.
3. Scheduling performance solutions and cost performance that are not by the plan, namely From the results of data analysis that has been carried out, *Schedule Variance* (SV) values in week 1 and week 2 are negative. However, in week 3 to week 12, SV is positive, meaning that the project work is on schedule or there are no delays in the field. Many technical and non-technical factors can cause project work to be late. Actions that can be taken if there is a delay are the implementing party evaluating the week that the delay occurs and can also use the crashing method so as not to have an impact on other job descriptions.
   The value of Cost Variance (CV) in week 1 to week 7 is negative, which means that costs have been inflated. However, in week 8 to week 12, the CV is positive, which means that the costs incurred are less than budgeted. Solutions that can be done in the event of cost swelling are parties implementers can review project financing and can also use the Cash flow method to determine deviations in project cost income and expenditure.

4. CONCLUSION

From the results of this research, the following conclusions were obtained:

1. This research was conducted on the Environmental Road Improvement Project in Tanipah Village, Mandastana District using the Earned Value Management Method and the Cash Flow Method.
2. This project was completed on time or according to schedule. The profit obtained from this project is IDR. 40,207,776.

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