

ANALYSIS OF PROJECT IMPLEMENTATION TIME WITH UPDATING PROGRESS METHOD USING MICROSOFT PROJECT (Case Study: Construction Project for Building B SMPN 14 Denpasar)

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ABSTRACT: *One of the targets for the success of a project is the timeliness of project completion, however, during the implementation of the Construction Project of Building B at SMPN 14 Denpasar, the duration of the work was delayed due to various factors. This causes the achievement/progress of work not in accordance with the action plan, there are changes in the field and unresolved problems. Based on these problems, the researchers conducted a study to find out which activities were updated after updating and the variance of the duration of the activities and the age of the project after updating so that the progress update method using Microsoft Project was used to determine the impact of field of the implementation on the project completion schedule. This study uses a descriptive research method with a quantitative approach with the data used in this study, namely the time schedule plan, realization time schedule, budget plan and daily reports. From the results of the analysis, it was found that the activities were updated after updating, as well as the variance in the duration of the activities and changes in the age of the project which changed from 161 days to 175 days after the update.*

Keywords: *Delay, Time, Updating Progress, Microsoft Project*

INTRODUCTION

A construction project is an activity that is carried out within a certain period of time and does not repeat itself. The process that occurs in a project will not be repeated in other projects. A project has many goals planned as project goals from the start. The success and timeliness of project completion is one of the goals that must be addressed, but problems arise when there are project delays that are detrimental to the owner and contractor. Therefore, the completion time is less than the specified time can have an impact on the cost, time, quality and performance of the project activities. Denpasar City has several development projects for the construction of public facilities, one of them is the construction project of building B SMPN 14 Denpasar. In carrying out the work of this activity there is a limit of working time. That is, these activities must be completed at the time specified in the contract. But in reality on the ground, work experiences delays in the duration of work due to various factors. This causes the achievements/progress of the work achieved to be not in accordance with the action plan, and there are changes and problems in areas that are not resolved causing delays. To overcome the problem of the time duration and restore the achievements/progress according to the schedule plan, this project uses a method that can help, namely the updating progress method. This method of updating progress is needed to determine the impact of field implementation on the project completion schedule. Based on these problems, the researcher conducted a study to find out which activities were updated after updating and the variance of activity duration and project age after updating in the

Building B SMPN 14 Denpasar construction project.

PROJECT

Hafnidar A. Rani (2016), argues that "a project is an activity with limited time and resources to achieve certain end results. In achieving the final result, project activities are constrained by budget, schedule, and quality, which are known as the three constraints. According to Suharto (1995), in the process of achieving these goals there are limitations called triple constraints, namely: Cost, namely the project must be completed at a cost that does not exceed the budget. Schedule, namely the project must be carried out in accordance with the specified time period and end date. If the final result is a new product, then the delivery may not exceed the specified time limit. Quality, namely the product or results of project activities must meet the required specifications and criteria.

project types

According to Wulfram I. Ervianto (2003), construction projects can be divided into two types of building groups, namely: Buildings, including houses, offices, factories, and others.

The characteristics of this group of buildings are:

- Construction projects result in places where people work or live.
- The work is carried out in a relatively narrow location and the general condition of the foundation is known.
- Management is needed, especially for progressing work.
- Civil buildings, including roads, bridges, dams and others.
- The characteristics of this group of buildings are:
- Construction projects are carried out to control nature so that it is useful for human interests.
- Work is carried out on large or long sites and foundation conditions are very different from each other in a project.
- Management is needed to solve problems

time

Hafnidar A. Rani (2016), stated that "time or schedule is one of the main objectives of a project. Delays will result in various forms of losses, for example additional costs, loss of market and product access, and others. Time management includes planning, creating and managing schedules.

SCHEDULING

Scheduling is allocating the time available to complete each task to complete a project, taking into account the existing constraints until optimal results are achieved (Husen, 2009).

PROGRESS UPDATING METHOD

Implementation in the field rarely results in an accurate schedule. If the results achieved are not in accordance with the activity plan, there are design changes at the site, unresolved problems at the site, and work delays. To return performance to the original schedule, the schedule must be revised to correct any discrepancies that occur.

The updating process is needed primarily to determine the impact of field implementation on the planned timeline for completing the work. These changes change the series of activities and can cause differences in work performance/progress over the life of the plan. Schedule adjustments can be made daily, weekly, or monthly. This depends on the project size, project complexity and

project characteristics. Updates are generally once a month, but this is not an absolute rule and is decided by the project manager. The stages of analysis using the updating progress method are as follows:

- Identification of activity start and finish dates along with the activity work calendar.
- Identification of job descriptions, duration of planning, predecessors as well as human resources (plans) of activities.
- Estimating the progress/achievement of the activities that have been achieved so that data will be obtained such as the duration of implementation, predecessors and human resources (realization).
- Carry out the updating process in the following way:
- Adjust the desired update date
- *Updates* work that has been completed 100% without any change in the duration of the work
- *Updates* work that has been completed 100% but there is a change in the duration of the work

MICROSOFT PROJECTS

Microsoft Projects is project software used to plan, monitor, and report project data. Because of its complete facilities and extraordinary ability to handle project data, this software is the most widely used by computer operators. Its presence can make it easier and easier to use, especially in completing work related to project data processing (I Gede Ngurah Sunatha and I Putu Yana Hermawan, 2020).

There are several advantages of the Microsoft project, including: *Software* easy to find on the market. The available menus are more complete, including network planning, task usage, gantt charts and tracking gantts. Able to schedule effectively and efficiently. Can be obtained directly cost flow information during the period. If you want to reschedule, you can easily change it. Proper production planning facilitates short run production.

GANTT CHART

Gantt chart is a view that displays a list of tasks and resources in the form of a horizontal bar chart showing the length of each task.

GANT TRACKING

Tracking Gantt is a bar chart-like view that is essential for tracking the entire project lifecycle to see how the project has been implemented to date.

RESEARCH METHODS

The method used in this research is descriptive research method where the descriptive method is a method of solving an existing problem by collecting data, then compiling, processing, and then analyzing it so that the final result is obtained. Descriptive method is divided into two, namely descriptive method with a qualitative approach and descriptive method with a quantitative approach. A qualitative approach is an approach that produces data in the form of written or spoken words from observable object descriptions. While the quantitative approach is an approach that allows recording and analysis of data in the form of numbers and then calculating the data. In this study, a descriptive research method was used with a quantitative approach to examine the timing of the project implementation using the updating progress method using the Microsoft Project in the construction of building B SMPN 14 Denpasar. This study aims to find out what activities have been updated as well as the variance of the duration of activities and the

age of the project after updating progress.

In this research, the type of data used is quantitative data. These data are the time schedule plan, time schedule realization, budget plan, and daily reports.

The stages of analysis in carrying out an analysis of project implementation time using the Updating Progress Method using Microsoft Project (Case Study: Building B Construction Project of SMPN 14 Denpasar) are as follows:

Stages before using Microsoft Project. The stage before using the Microsoft project is to analyze planning data and implementation data. From this analysis, the results of planning data are obtained in the form of a work calendar (working days, working time, and holidays), job description, duration of plans, predecessors, and human resources (plans), while implementation data are in the form of implementation duration, predecessors, and resources. human (realization).

Stages of analysis using Microsoft Project. The stages of analysis using the Microsoft Project are divided into two stages, namely inputting planning data and then inputting implementation data. At the planning data input stage, all planning data is input such as work calendars, activity descriptions, predecessors and human resources (plans). After input, it produces a Gantt chart. After that, enter the next stage, namely inputting implementation data such as implementation duration, predecessors, and human resources (realization). After input, it produces a tracking gantt. After the tracking gantt display appears, it can be seen which activities have been updated, the variance of the duration of the activities and the age of the project after updating.

RESULTS AND DISCUSSION

Updated activities

The activities that underwent the update are known from the difference in the start and finish times of each work item before being updated with the start and finish times of each work item after being updated in the tracking gantt. Some jobs are right according to the planned time or do not experience changes in start and finish times which are marked with the appropriate information in the table while other jobs experience changes in start and finish times so that they experience updates and are given updated information in the table.

TABLE 1. UPDATED ACTIVITIES

No	Description of activities	Start and End Dates		Ket.
		Before updating	After updating	
	pack. Sloop S1 25 x 35 cm			
1	pack. Concrete quality $f_c = 21.7$ MPa	July 30 – August 6	August 7 – August 13	<i>Updates</i>
2	pack. Main reinforcement	July 30 – August 6	July 30 – August 6	In accordance
3	pack. Stirrup reinforcement	July 30 – August 6	July 30 – August 6	In accordance

4	pack. Use 2x sloof formwork	July 30 – August 6	July 30 – August 6	In accordance
pack. Practical sloof Sp 15 x 20 cm				
5	pack. Concrete quality $f_c = 21.7$ MPa	July 30–August 6	August 7–13	Updates
6	pack. Main reinforcement	July 30–August 6	August 7–13	Updates
7	pack. Stirrup reinforcement	July 30–August 6	August 7–13	Updates
8	pack. Use 2x sloof formwork	July 30–August 6	August 7–13	Updates
...				

variance in the duration of the activities

The duration variant itself is a type of duration that deviates from the initial duration or the planning duration is different from the implementation duration after updating. The calculation is obtained from the difference in the number of days in the baseline with the critical task or task progress path in attachment 5 tracking gantt.

TABLE 2. VARIANTS OF ACTIVITY DURATIONS

No.	Description of activities	Plan	updating	Duration
		Duration	Duration	Variant
pack. Sloop S1 25 x 35 cm				
1.	pack. Concrete quality $f_c = 21.7$ MPa	7	14	14
2.	pack. Main reinforcement	7	7	-
3.	pack. Stirrup reinforcement	7	7	-
4.	pack. Use 2x sloof formwork	7	7	-
pack. Practical sloof Sp 15 x 20 cm				
5.	pack. Concrete quality $f_c = 21.7$ MPa	7	14	14
6.	pack. Main reinforcement	7	14	14
7.	pack. Stirrup reinforcement	7	14	14
8.	pack. Use 2x sloof formwork	7	14	14
...				

project age

The age of the construction project for building B SMPN 14 Denpasar has also changed where in the time schedule the project life plan is 161 (one hundred and sixty one) days starting from June 25 2020 to December 6 2020, but after an analysis of updating progress the project age has changed to 175 (one hundred and seventy five) days starting from 25 June 2020 to 20 December 2020, which means that the construction activities for building B SMPN 14 Denpasar have been delayed.

CONCLUSION

Based on the results of the analysis of project implementation time using the updating progress

method using the microsoft project in the Building B SMPN 14 Denpasar construction project, the following conclusions are obtained: The updating progress method is a method that helps find out how far the shift in work time is due to work delays. In this study, after updating on August 29, to be exact, on the 9th week, it was found that there were activities that were updated. These updated activities indicate that there is a delay in project progress. Because there are activities that are experiencing updates, the duration of the planning will automatically change from the initial schedule resulting in a variant of the duration of these activities. Based on the variance of the duration of the activity, it was found that several jobs experienced changes in the duration/variant of the duration of the work. This causes a change in the age of the project, namely from 161 (one hundred and sixty one) days starting from 25 June 2020 to 6 December 2020, but after an analysis of updating the progress of the project life changes to 175 (one hundred and seventy five) days starting from the 25 June 2020 to 20 December 2020.

SUGGESTION

Based on the conclusions conveyed, the following suggestions can be put forward: In implementing a construction project, one of the most important things in the success and success of a project is the timeliness of project completion. If the project experiences delays, it can also have an impact on other important project points, namely project costs and quality. Therefore it is necessary to strictly monitor the time of project implementation. Because basically the project execution time is not in accordance with the plan due to various possible things that will occur during implementation in the field, an updating progress method is very necessary. This method needs to be done within a period of weeks or months in order to control project time and minimize shifts in duration which cause project delays.

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