

CHAPTER I

INTRODUCTION

1.1 Background

Nowadays, the infrastructure development is one of the important things in developing country strategy. Development is an important thing to make sure country is able to compete with the others countries. Infrastructure developing is a good choice based on government to develop their country. Development of city's infrastructure is an element which correlates with country developing to make sure that the development is approximately spread evenly. An economic capital income will be increased by country development, which means country development makes a better living for Indonesian.

Country development could be increased as long as the industry growth in each area in Indonesia; including city. Industry growth is the Indonesia's priority caused it gives benefits for country. According to Vibizmedia (2015), its benefits are; first, industrialization increases significant impact for society, meanwhile the increasing of economic capital means country's income and market sources can be increased too. Second, it increases the revenue and profitability in export market and the economic capital income. Third, it decreases demand of import, increases productivity and the investment not only in Java but also other islands in Indonesia.

In the other side, industry facility in Indonesia is limited and not enough to compete with the competitor industry (from other country), this is the main issue and problem of Indonesia's industry. Means, it cannot reach the higher economic capital income for Indonesia. To respond those problems, some industries want to expand their business to get the higher profit per month. New construction development in industry is the one of the alternatives to expand their production capacity and expand their market. The advantages of new construction

development for industry are; industries are able to add production capacity, make the better technology, and increase the economic capital income for its country.

The status of West Sumatera is still as the development province in industrial sector. Although the majority income in this area is mostly from agricultural sector, but it has an industry that has a good economic growth, named PT Semen Padang. In current situation, PT Semen Padang has five existing plants area named Indarung I, II, III, IV, and V and they want increase their capacity and income by develop Indarung VI, which has higher capacity of clinker and cement. The purposes of Indarung VI development are to distribute cement for Semen Indonesia Group for 2016 on right time, cost, quality, and work scope to increase the company performance (Technical Report of PT Semen Padang)

The project investment for Indarung VI project was Rp 3.840.851.000.000 and its effective date on construction project in Indarung VI (start from Q-1 on 2014) and completion construction in Quartal-3 in the next 2016 (Q-3 2016), has schedule level like this graph:

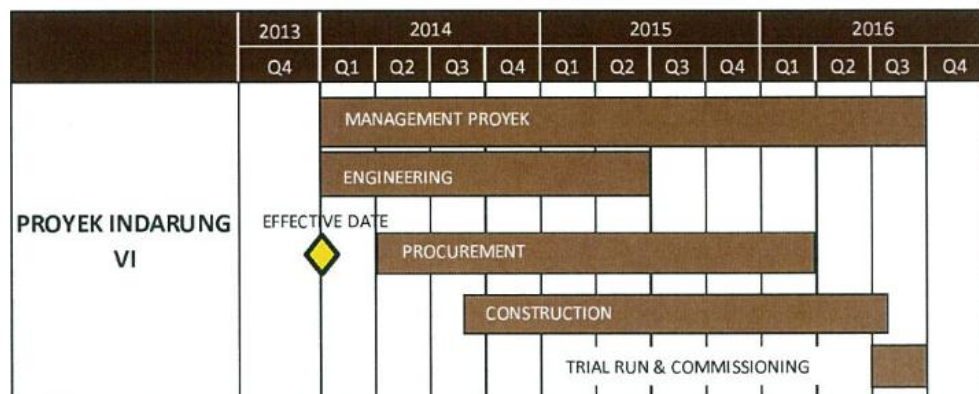


Figure 1.1 Schedule Level 1 Project Indarung VI (PT Semen Padang)

In general, Indarung VI construction activity is divided into three sub activities; mechanical construction, electrical and instrumental construction, and civil construction. This final project is focused on civil construction. Civil construction is a sub activity which focuses in the construction project activity. The construction is processed depending on the master schedule. Civil

construction has eight types, named CC-1 until CC-8. CC-1 (Civil Construction 1) was the first construction which was processed. According to the Master Schedule, civil construction 1 project has been started since October, 10th 2014 and will be finished on December, 24th 2015. A set of activities in Civil Construction is shown in Figure 1.2.



Figure 1.2 Set of Activities in Civil Construction Project Indarung VI

Civil Construction 1 (CC-1) was the first construction project that will be held by PT Semen Padang in Indarung VI Project. To identify the project progress, PT Semen Padang has the recapitulation of project progress and performance per week. The progress on week 40, will be shown on Table 1.1

Table 1.1 Recapitulation Data of Project Planed and Performance in Civil Construction 1 Project

WBS	Weight	Schedule		Actual	
		Current	Cumulative	Current	Cumulative
Mobilization and Preparation	0,95%	0,014%	0,802%	0,029%	0,820%
Structuring Cyclone Preheater	28,46%	0,100%	26,960%	0,189%	16,315%
Kiln Feed	12,37%	0,316%	0,728%	0,000%	1,790%
Raw mill Base	2,88%	0,000%	2,880%	0,000%	2,610%
CF Silo	36,90%	0,000%	36,768%	0,000%	26,208%
Kiln Base	4,65%	0,000%	4,64%	0,000%	4,330%
Drill Pole	13,77%	0,000%	13,772%	0,000%	13,565%
Total	100%	0,43%	86,56%	0,22%	65,64%

Table 1.1 shows that the project progress didn't complete its target. According to project performance in July 2015, its progress reached only 65.64%, but estimated plan was 86.58%. Means, the project progress was worse than the target in 20.92%. The 20,92% as the variance means the number of bad performance for non-value added activity (waste) in project activity. According to Mr. Verdi (as PCRM Staff in Indarung VI Project), wasting in project activity caused the increasing in cost and schedule plans. It suddenly effected the project could not reach its target performance. In predecessor study, the most wastes in the project activity were rework and waiting. Waiting was caused of material waiting, machine, and tool waiting. Rework was caused by the bad quality of construction, which needed to be re-built. It can be concluded that company as the owner needs to identify current and potential waste and risk to find good solution to reach customer satisfaction.

Project evaluation is the method which helps stakeholder to know the performance of the project. Project evaluation finds the waste (on duration) that must be identified by stakeholder and shareholder. Project evaluation helps us to know and evaluate the performance of the project and identify problems occurred. According to Fatimah et al. (2013), in the construction process, evaluation in the process (including waste) didn't get the attention from stakeholder. On the other hand, evaluation is needed by company to know the progress of the project and estimate when the project will be finished. Evaluation helps stakeholder to know when the project didn't reach target and find the main factor of waste in that problem.

Lean Project Management (LPM) is the method which identifies waste and risk to find the solution in each problem before it happened. LPM has some principles, named project system, leading people, chartering, right solution, managing variation, managing risk, project plan, and execution. (Mandagi and Dundu, 2014)

LPM will be applied after the evaluation of the project schedule and to identify the problem occurred. Yahya (2013), in his research found that the function and advantages of using project evaluation, named Earned Value Analysis. His research focused on the performance of the project, but didn't give the action and analyze the waste in the project activity progress. Then the next research by Ratih Indri Hapsari and Prof. Ir. Moses L. Singgih, Msc., MReg.Sc., Ph.D (2013) focused on the implemented lean project management in construction project planning but they didn't evaluate the progress project at the beginning. Based on that problem, this research wants to combine the project evaluation and identify the waste on the project with Lean Project Management Method. It will give continuous improvement in the project and next project that will be held by stakeholder.

1.2 Problem Formulation

The problem formulation in research is how to apply earned value analysis to evaluate the project activity progress and lean project management concept in order to minimize the waste on the Indarung VI Project, PT Semen Padang.

1.3 Research Objectives

The objectives of research are:

1. Evaluate the construction project progress for CC-1 Project, Indarung VI using Earned Value Analysis.
2. Implement the concept of Lean Project Management in Civil Construction 1 Project, Indarung VI, PT Semen Padang.

1.4 Research Scopes

The scopes of this research are:

1. Project evaluation is focused on Civil Construction-1 Indarung VI Project, PT Semen Padang.
2. The wastes that will be identified focus of 8 wastes (Hafez and Aziz, 2013)
3. Final project uses two principles of Lean Project Management.
4. The step of FMEA is until the risk respond of the failure mode.

1.5 Outline of Report

The outlines of this report are:

CHAPTER I INTRODUCTION

The contents are introduction, problem formulation, objective, limitation and assumption, and systematic writing in the research.

CHAPTER II LITERATURE REVIEW

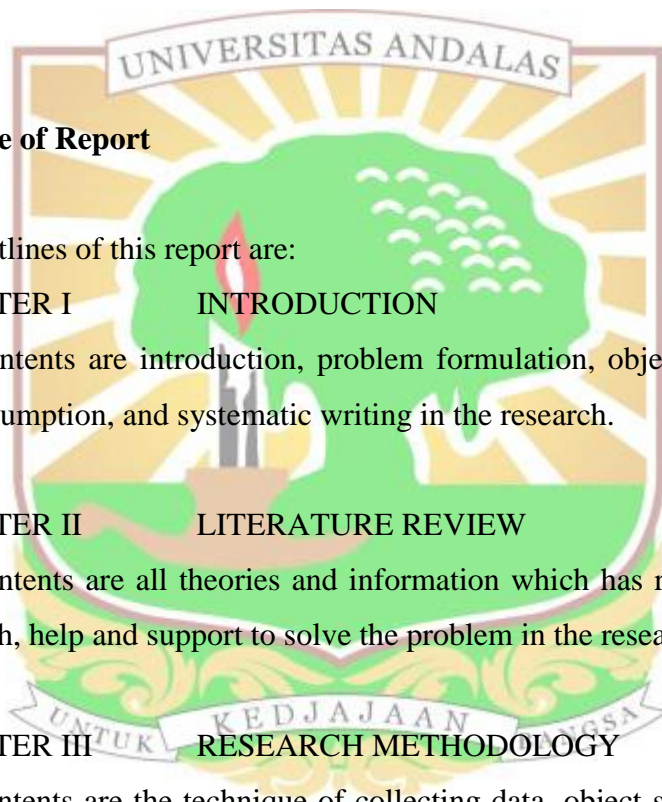
The contents are all theories and information which has relation with the research, help and support to solve the problem in the research.

CHAPTER III RESEARCH METHODOLOGY

The contents are the technique of collecting data, object study and theory that will be applied. The research methodology contains the flowchart to show the steps of process in the final project.

CHAPTER IV RESULT AND DISCUSSION

The contents of this part are the data that must be collected in the final project. The data is collected by the company to be analyzed and help researcher to process the data. Then, it is included the steps that must be



followed by the data. Process and analysis focused on the methods that will be applied on this research and the analysis of the method application.

CHAPTER V CONCLUSION

The contents of this part are the conclusion of the problem and the recommendation for the next research.

