LABOR PRODUCTIVITY IN PROJECT IMPLEMENTATION IN SAMPANG DISTRICT DURING TOBACCO PLANTATION SEASON

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ABSTRACT

Labor productivity is one of the main elements in determining the successful implementation of a construction project, one of the jobs that require a productive workforce is Fc' 25 Mpa Wiremesh Cement Concrete Pavement (M8). This research was conducted to know the level of productivity in Cement Concrete Pavement Fc' 25 Mpa Wiremesh and then compared with AHSP Bina Marga 2022 or Permen PUPR RI No. 1 of 2022 and mentions the solutions provided to the obstacles in the field during the implementation of M8 in the field. The results on the Karang Dalem – Patarongan Road Improvement project in Sampang District was 30.77 m^3/OH for the foreman and 30.81 m^3/ OH for workers, while the calculation of AHSP Bina Marga 2022 yields 20.75 m^3/OH for foremen and 33.43 m^3/OH for workers. In the Torjun – Pangarengan Road Improvement project in Torjun District, the calculations obtained results of 31.94 m^3/OH for the foreman and 32.10 m3/OH for the workers, while the 2022 AHSP Bina Marga calculation obtained results of 20.75 m^3/OH for the foreman and 37, 05 m^3/OH for workers. Furthermore, the East Tobai – Poreh Road Improvement project in Sokobanah District was 20.32 m^3/OH for foremen and 20.30 m^3/OH for workers, while the 2022 AHSP Bina Marga calculations were 20.75 m^3/OH for foremen and 32.27 m^3/OH for workers. In general, the obstacles encountered in the implementation of the concrete road project in Sampang district during the tobacco growing season were the hot weather, labor motivation, and the distance of the casting supplier from the project work location.

Keywords: *Labor Productivity; Cement Concrete Pavement; Fc' 25 Mpa; Wiremesh (M8).*

1. Introduction

According to Stevenson, a project is a one-time operation designed to achieve a certain set of goals within a limited time frame. Meanwhile, Heizer & Render, states that a project can be defined as a series of related tasks that are directed to a main result.

The tobacco season is very influential in almost all aspects of people's lives, including in the field of development projects, because tobacco is the main commodity of the Madurese, the majority of whom work as farmers, including farmers in Sampang Regency who also work as project workers.

Project workers or workforce is one of the resources that is needed in a project activity, which is required to work efficiently, that is to be able to work effectively in a relatively short time and obtain the volume of work that is by the job description that has been determined, including on During the growing season, tobacco is the main commodity of farmers in Madura every dry season. Therefore it is very important to carry out an in-depth analysis of the influence of the tobacco growing season on project implementation.

In this research, the author intends to find out the results of a comparison between productivity in the field and planning for project implementation in Sampang Regency during the tobacco growing season, as well as mention the solutions given to problems in the field during project implementation.

2. Material and Methods

In this study, the author intends to analyze project implementation during the tobacco growing season in Sampang Regency by referring to previous research, namely the Productivity Analysis of Construction Workers during the Tobacco Season in Pamekasan Regency.

Based on the description above, it is very important to carry out an analysis of labor productivity during the tobacco growing season for project implementation, in this case, according to the project plan and actual implementation in the field during the tobacco growing season in Sampang Regency.

2.1. Research sites

Research on Labor Productivity Analysis for Project Implementation in Sampang Regency was carried out in three locations, namely: Improvement of Karang Dalem – Patarongan Road in Sampang District, Improvement of Torjun – Pangarengan Road in Torjun District, and Improvement of East Tobai Road – Poreh in Sokobanah District.
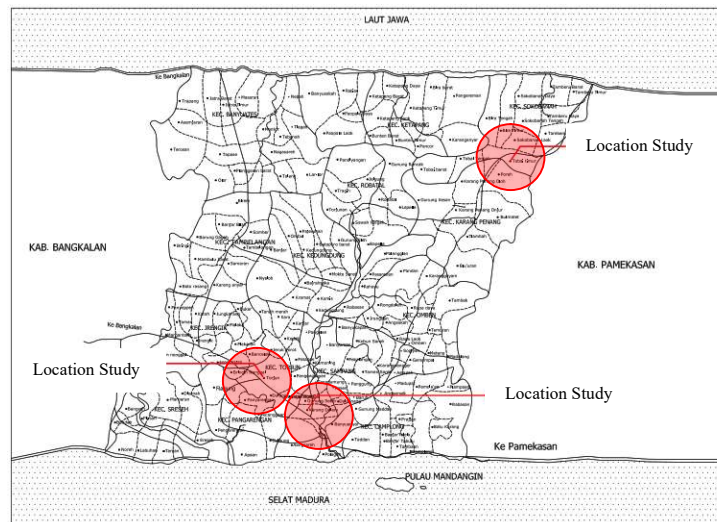

Figure 1. Research Location Map

2.2 Population and Sample

In this study, the population was all workers who worked on Cement Concrete Pavement Fc' 25 Mpa Wiremesh (M8). Based on the data obtained, it is known that the number of workers on the Karang Dalem - Patarongan Road Improvement work is 11 people, the number of workers on the Torjun - Pangarongan Road Improvement work is 12 people, and the number of workers on the Tobai Timur - Poreh Road Improvement work is 11 people.

The sample used in this study is a sample using a saturated sampling technique due to the small population.

2.3 Research data

Research data are all facts and figures that can be used as material to compile information. The data used in this study are grouped into 2, namely: primary data and secondary data.

Primary data in this study is observation or direct observation. Observations are made to determine the condition of the research project directly which aims to observe or find out the productivity of workers and the number of workers per day as well as the constraints that the authors observe during project implementation. When the observations were made, the authors used tools such as cell phones, meters, and stationery.

The secondary data used in this study are articles, 2022 Bina Marga Work Unit Price Analysis (AHSP), and project work drawings.

2.4 Research Stages

The following are the steps that need to be carried out in this research.

1. Problem Identification

   The first step in determining the research topic is to determine the subject matter which is then used as the research title. After that, conduct consultations regarding the titles used in the research so that further background, problem formulation, objectives, problem boundaries, and benefits are obtained.

2. Collection of Primary Data and Secondary Data

   Researchers make observations or direct observations and retrieve data carried out at the observed work location. At different locations and on the same day, the compiler shared tasks with the team to oversee the implementation of the concrete road project in Sampang Regency during the tobacco season, so that some of the observational data obtained by the compiler was also data obtained from the supervision of colleagues in one team.

3. Data Processing

   After the primary and secondary data have been collected, the next stage of data processing is carried out by looking for labor productivity obtained per day in the field.

4. Data Analysis

   Data analysis in this study was by analyzing the coefficient of labor productivity based on observational data on Cement Concrete Pavement Fc' 25 MPa Wiremesh (M8) work which consisted of formwork installation, wire mesh installation, and casting. Then compared with productivity in the 2022 AHSP Bina Marga provisions, is the work productivity in the field greater or less than the 2022 Bina Marga AHS?

5. Discussion

   After all the processes above have been carried out, the results obtained from the data analysis process will be explained clearly and by the planned research objectives.

6. Conclusion

   The conclusion is the final stage of this research. The conclusion contains a summary of the results of the discussion that has been processed from all stages of the research.

2.5 Framework of Thinking

The steps to be taken can be seen in Figure 2 below.

3. Result and Discussion

3.1. Project

According to Rani, a project is an activity carried out with limited time and resources to achieve a specified final result. In achieving the final result, project activities are limited by budget, schedule, and quality, known as the triple constraint [13]. The project is a complex business activity, non-routine in nature, has limitations on time, budget (cost), and resources (resources), and has specifications for the product to be produced [8]. Projects are interpreted differently according to each person's perspective. A project is a sequence of related work usually directed at a main output and carried out over a significant period [4]. A project is a series of activities carried out by a group of people to achieve certain goals [6].

According to Suharto, in the process of achieving these goals, some limitations must be met, namely the amount of costs (budget) allocated, schedule, and quality that must be met [1]. These three things are important parameters for project organizers which are often associated with projectwithbjectives. The three constraints above are callee triple constraints [5].
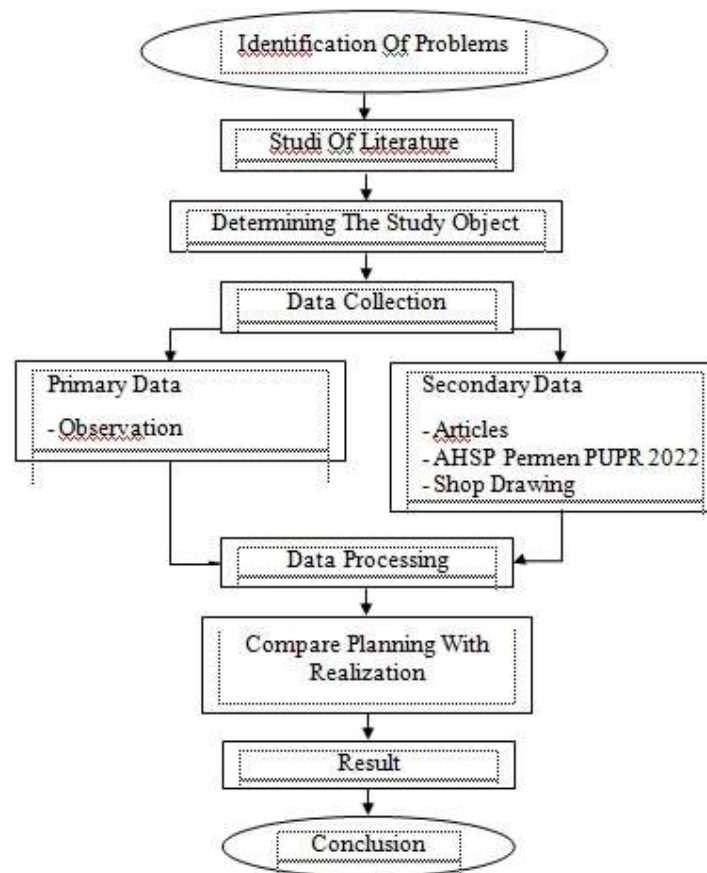
1. The project budget must be completed at a cost that does not exceed the budget. For projects that involve large amounts of funds and work schedules for years, the budget is not only determined as a total project but is broken down into its components or per certain period (for example, quarterly) whose amount is adjusted according to needs. Thus, the completion of the project parts must also meet the budget targets per period.
2. The project schedule must be carried out by the specified period and period the final result is a new product, then the delivery may not exceed the specified time limit [17].
3. The quality of products or results of project activities must meet the required specifications and criteria. For example, if the result of the project activity is in the form of a factory installation, then the criteria that must be met are that the factory must be able to operate satisfactorily within a predetermined period. So, fulfilling quality requirements means being able to fulfill the intended task or often referred to as fit for the intended use.

3.2. Construction

According to Rani, the word "Construction" can be defined as the arrangement/arrangement of the elements of a building in which the position of each of its parts is by its function [3]. Talking about construction, what comes to mind are high-rise buildings, bridges, dams, highways, irrigation structures, airports,s and others [13].

In general, there are 2 (two) types of construction, namely [11]:
1. Building Construction, consisting of buildings, housing, hotels, and others; And
2. Construction of civil buildings, such as bridges, roads, airports, tunnels, irrigation, dams, and others.

3.3. Labor

In implementing a construction project, one of the resources that determine its success is the workforce [9]. The type and intensity of project activities change throughout its cycle, so the provision of the number of personnel, types of skills and expertisertise must follow the changing demands of ongoing activities [18]. The largest number of workers in the implementation of the project is the workforce in the field. Labor is labor that is directly related to physical construction work in the field [7].

Judging from the form of the working relationship between the parties concerned, the project workforce, especially the construction workforce, is divided into 2, namely as follows [10].

1. Contract workers, namely workers based on work ties that exist between labor supply companies and contractors for a certain period.
2. Direct hire, workers who are recruited and sign individual employment bonds with contractor companies. Generally followed by practice, until it is considered sufficient to have basic abilities and skills [16].

3.4. Productivity

Productivity is the ratio (ratio) obtained between the output divided by the input so that a value (index) of productivity will be obtained [2]. From the results of this productivity, an activity can be carried out so that productivity can increase, among others, by minimizing unproductive activities such as delays, setups, and land loading-unloading [19].

According to Limanto in Suhaeb, Productivity is the ability to produce, a productive state of effectiveness in cultivating. The most important part of the definition of productivity concepts is as follows [15]:

1. Capacity to produce is the power or ability behind the production itself,
2. Effectiveness of productivity (effectiveness in seeking production) is a good or bad measure of the use of resources,
3. Production per unit of effort (production per unit of each business) is to measure the output of factors of production concerning a predetermined time peperioddefinition above gives an illustration of the difficulty of planning to determine the level of productivity [14]. This also causes the number of units of productivity obtained. Each planner must be able to decide on the effect of productivity, whether on time, number of workers, machine capacity, equipment use,d or costs [12].

Measurement of daily productivity is calculated based on the volume obtained through the results of observing the work on Cement Concrete Pavement Fc' 25 MPa Wiremesh (M8) per day.

Table 1. Results of Measuring the Improvement of the Karang Dalem – Patarongan Road

Day To-	Volume (m^3)	Labor (People)	
		Foreman	Worker
1	30	1	10
2	30	1	10
3	30	1	10
4	36	1	10
5	30	1	9
6	29,54	1	9
Total	185,54	6	58

Table 2. Results of Measuring the Improvement of the Torjun – Pangareng Road

Day To-	Volume (m^3)	Labor (People)	
		Foreman	Worker
1	30	1	11
2	36	1	11
3	36	1	10

71

Day To-	Volume (m³)	Labor (People)	
		Foreman	Worker
4	36	1	11
5	36	1	11
6	36	1	11
7	21,3	1	10
Total	231,3	7	75

Table 3. Results of Measurement of the Improvement of the East Tobai – Poreh Road

Day To-	Volume (m³)	Labor (People)	
		Foreman	Worker
1	24	1	8
2	18	1	8
3	21	1	9
4	21	1	10
5	21	1	10
6	18	1	10
7	18	1	10
8	21	1	9
9	22,7	1	10
Total	184,7	9	84

Based on the calculations, the foreman and worker coefficient tables are produced as follows.

Table 4. Recapitulation of the Workforce Coefficient for the Improvement of the Karang Dalem – Patarongan Road

Day To-	Volume (m3)	Labor (People)		Coefficient Labor	
		Foreman	Worker	Foreman	Worker
1	30	1	10	0,0333	0,3333
2	30	1	10	0,0333	0,3333
3	30	1	10	0,0333	0,3333
4	36	1	10	0,0278	0,2778
5	30	1	9	0,0333	0,3000
6	29,54	1	9	0,0339	0,3047
Total	185,54			0,1950	1,8824
Average	30,92	Daily Average Coefficient		0,0325	0,3137

Table 5. Recapitulation of the Workforce Coefficient for the Improvement of the Torjun – Pangareng Road

Day To-	Volume (m3)	Labor (People)		Coefficient Labor	
		Foreman	Worker	Foreman	Worker
1	30	1	11	0,0333	0,3667
2	36	1	11	0,0278	0,3056
3	36	1	10	0,0278	0,2778
4	36	1	11	0,0278	0,3056
5	36	1	11	0,0278	0,3056
6	36	1	11	0,0278	0,3056
7	21,3	1	10	0,0469	0,4695
Total	231,3			0,2192	2,3362
Average	33,04	Daily Average Coefficient		0,0313	0,3337

Table 6. Recapitulation of the Workforce Coefficient of East Tobai Road Improvement – Porch

Day To-	Volume (m3)	Labor (People)		Coefficient Labor	
		Foreman	Worker	Foreman	Worker
1	24	1	8	0,0417	0,3333
2	18	1	8	0,0556	0,4444
3	21	1	9	0,0476	0,4286
4	21	1	10	0,0476	0,4762
5	21	1	10	0,0476	0,4762
6	18	1	10	0,0556	0,5556
7	18	1	10	0,0556	0,5556
8	21	1	9	0,0476	0,4286
9	22,7	1	10	0,0441	0,4405
Total	**184,7**			**0,4429**	**4,1389**
Average	**20,52**	Daily Average Coefficient		**0,0492**	**0,4599**

The following are table of labor productivity after calculation.

Table 7. Productivity Recapitulation of the Karang Dalem – Patarongan Road Improvement

Day To-	Volume (m3)	Productivity AHSP 2022 (m³/OH)		Productivity Field (m³/OH)	
		Foreman	Worker	Foreman	Worker
1	30	20,75	34,58	30,77	31,87
2	30	20,75	34,58	30,77	31,87
3	30	20,75	34,58	30,77	31,87
4	36	20,75	34,58	30,77	31,87
5	30	20,75	31,13	30,77	28,69
6	29,54	20,75	31,13	30,77	28,69
Total	**185,54**	**124,50**	**200,58**	**184,65**	**184,87**
Average	**30,92**	**20,75**	**33,43**	**30,77**	**30,81**

Table 8. Productivity Recapitulation of Torjun – Pangareng Road Improvement

Day To-	Volume (m3)	Productivity AHSP 2022 (m³/OH)		Productivity Field (m³/OH)	
		Foreman	Worker	Foreman	Worker
1	30	20,75	38,04	31,94	32,96
2	36	20,75	38,04	31,94	32,96
3	36	20,75	34,58	31,94	29,96
4	36	20,75	38,04	31,94	32,96
5	36	20,75	38,04	31,94	32,96
6	36	20,75	38,04	31,94	32,96
7	21,3	20,75	34,58	31,94	29,96
Total	**231,3**	**145,25**	**259,38**	**223,57**	**224,73**
Average	**33,04**	**20,75**	**37,05**	**31,94**	**32,10**

Table 9. Productivity Recapitulation of the East Tobai – Poreh Road Improvement

Day To-	Volume (m3)	Productivity AHSP 2022 (m³/OH)		Productivity Field (m³/OH)	
		Foreman	Worker	Foreman	Worker
1	24	20,75	27,67	20,32	17,40
2	18	20,75	27,67	20,32	17,40
3	21	20,75	31,13	20,32	19,57
4	21	20,75	34,58	20,32	21,74
5	21	20,75	34,58	20,32	21,74
6	18	20,75	34,58	20,32	21,74
7	18	20,75	34,58	20,32	21,74
8	21	20,75	31,13	20,32	19,57
9	22,7	20,75	34,58	20,32	21,74
Total	**184,7**	**186,75**	**290,50**	**182,90**	**182,66**
Average	**20,52**	**20,75**	**32,28**	**20,32**	**20,30**

4.   Conclusions

From the results of data analysis conducted in this study, the average labor productivity was 30.77 m³/day for foremen and 30.81 m3/day for workers on the Karang Dalem – Patarongan Road Improvement project in Sampang District. In the Torjun - Pangarengan Road Improvement project in Torjun District it is 31.94 m3/day for foremen and 32.10 m³/day for workers. In the East Tobai – Poreh Road Improvement project in Sokobanah District, it is 20.32 m³/day for foremen and 20.30 m3/day for workers.

In a productivity comparison study on the Karang Dalem – Patarongan Road Improvement project in Sampang District, the calculation results obtained were 30.77 m³/OH for foremen and 30.81 m³/OH for workers, while the calculation of AHSP Bina Marga 2022 obtained results of 20.75 m³/OH for the foreman and 33.43 m3/OH for the worker. In the Torjun – Pangarengan Road Improvement project in Torjun District, the calculations obtained results of 31.94 m³/OH for the foreman and 32.10 m³/OH for the workers, while the 2022 AHSP Bina Marga calculation obtained results of 20.75 m³/OH for the foreman and 37, 05 m³/OH for workers. Furthermore, in the East Tobai – Poreh Road Improvement project in Sokobanah District, the calculation results obtained were 20.32 m³/OH for foremen and 20.30 m³/OH for workers, while the 2022 AHSP Bina Marga calculations obtained results of 20.75 m³/OH for foremen and 32.27 m³/OH for workers.

In general, the obstacles encountered in the implementation of the concrete road project in Sampang district during the tobacco growing season were the hot weather, labor motivation, and the distance of the casting supplier from the project work location. This is in line with the factors that affect labor productivity according to Limanto in Suhaeb [15], including the character of workers in the form of motivation and project work conditions in the form of environmental conditions around the project and local weather. When the weather is hot during the tobacco season, the workforce lacks the motivation to complete tasks due to fatigue. The condition of the environment around the project is also an obstacle because, during the tobacco season, the workforce in the area also works as tobacco farmers so they still use their time to come to the plantation before coming to the project site.

2. Mr. Deddy Asmaroni, ST., MT. as the Head of the Civil Engineering Study Program, Madura University.
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