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ANALYSIS OF OVERTIME WORK PRODUCTIVITY AND WAGE SUITABILITY IN THE WORKFORCE OF THE BANJARMASIN-MARTAPURA ROAD RECONSTRUCTION PROJECT SECTION II

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ABSTRACT

In an effort to meet the deadline for the Banjarmasin – Martapura Road Reconstruction Project Section II, the implementing party often accelerates the schedule by implementing an overtime work system. To determine the labor productivity of the Banjarmasin – Martapura Road Reconstruction Project Section II, this study uses the partial productivity method. This method compares the time used per day as *the input* value with the amount of work produced each day as the *output value*.

The results of the calculation obtained from the productivity analysis using a partial approach are obtained that the average productivity of normal working hours in paving work is 15,923 m3/hour and in road shoulder casting work is 1,877 m3/hour. The average productivity of overtime working hours for paving work was 16,285 m3/hour and for casting work was 2,190 m3/hour. From the results obtained, it is known that the productivity value of overtime working hours is greater than the productivity of normal working hours, this is due to obstacles that occur, namely the asphalt and concrete production process from AMP (*Asphalt Mixing Plant)* which is late because the engine that often breaks down is also because this road project is in the middle of a dense community so that the material process to the location often experiences delays. By implementing overtime working hours, the labor wage budget increased by 86.717%. However, the amount of overtime wages implemented by the Banjarmasin – Martapura Road Reconstruction Project Section II is not in accordance with the amount of wages according to the provisions of Government Regulation No. 35 of 2021.

Keywords: Partial productivity, overtime work, overtime wages, labor

1. INTRODUCTION

Human resources are one of the components that affect how far a construction project develops. The production will not provide optimal and satisfactory results if it is not supported by good human resources. Even improper use of human resources can lead to significant losses to the project. Management must recognize that human resources are the most strategic component in an organization. Thus, wages are one of the important measures to assess the quality of life of a worker, employee, or workforce. Workers are entitled to compensation from their companies for their sacrifices.

According to PP. No. 35 of 2021, wages are obligations paid by employers or employers to workers or laborers who are employed and paid according to employment agreements, agreements, or legal regulations, including allowances for workers and their families for work and/or services that have been or will be performed. Overtime pay is the salary given by an employer to an employee or laborer who works during overtime hours.

PT. Kelana Multi Construction is a contractor who also uses labor in the Banjarmasin – Martapura road reconstruction project section II. The problem that occurred in this reconstruction project was the delay in asphalt production from AMP (Asphalt Mixing Plant*)* so that overtime work was necessary.

2. THEORETICAL FOUNDATIONS

Labor Productivity

According to Ervianto (2008), Productivity is a comparison between *output* (activity results) and *inputs* (inputs). In the field of construction, the term is often associated with worker productivity, which can be defined as a comparison between work *output* and hours worked. Productivity is the ratio between *inputs* and *outputs*, or the output of production to the total resources used.

Partial Productivity

Partial productivity is often also called single productivity which indicates the productivity of a particular factor used to produce outputs. The formula for partial productivity is as follows:

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$$\text{Productivity} = \frac{\text{Quantity of Work}}{\text{Duration of Time}}$$

Overtime Work

Currently, construction usually requires a fast implementation time. This can happen for a variety of reasons, one of which is to meet the project objectives set out in the work contract, at the request of the project owner, or for other reasons. Supporting resources, such as labor, materials, and equipment, must be available to meet the needs when overtime work is performed.

3. METHOD

This final project research focuses on the productivity of overtime working hours in construction workers working on the Banjarmasin-Martapura Reconstruction Project Section II. The results of this study are the productivity value of overtime working hours, the productivity value of normal working hours, and the increase in wages for overtime working hours. The output is based on the results of the analysis of primary and secondary data calculations. In addition, this study determines whether the overtime wages applied to the project are in accordance with the overtime wages that should be in accordance with the overtime provisions of PP No. 35 of 2021.

Partial productivity analysis needs to be carried out to see how normal working hours and overtime affect labor productivity with a partial productivity approach in the Banjarmasin – Martapura Road Reconstruction Project Section II.

From the results of measuring the productivity value of normal working hours and overtime working hours, it can be known that the change in productivity value during working hours and after overtime working hours, how to analyze the change in productivity value is as follows:

$$\sigma \text{ Productivity} = \overline{XI} - \overline{Xn}$$

4. RESULTS AND DISCUSSION

Normal Working Hours Productivity

Normal hour labor productivity has been calculated using partial productivity measurements can be seen in Tables 4.1 – 4.3.

Table 4. 1 Paving Productivity during Normal Working Hours

Date	Daily Work Volume (tons)	Working Hours per Day	Productivity (tons/hour)	Weather Description
4/7/2024	119,99	7 hours	18,47	Bright
6/7/2024	84,67	7 hours	12,10	Rain
9/7/2024	128,05	7 hours	18,29	Bright
12/7/2024	120,28	7 jam	17,18	Bright
14/7/2024	113,07	7 jam	16,15	Bright
23/7/2024	84,37	7 jam	12,05	Rain
25/7/2024	120,53	7 jam	17,22	Bright

Table 4. 2 Foundry Productivity during Normal Working Hours

Date	Daily Work Volume (m3)	Working Hours per Day	Productivity (m3/h)	Weather Description
16/7/2024	10	7 jam	1,43	Bright
17/7/2024	12	7 jam	1,71	Bright
19/7/2024	14	7 jam	2,00	Bright
23/7/2024	16	7 jam	2,43	Rain
24/7/2024	14	7 jam	2,29	Bright
25/7/2024	11	7 jam	1,57	Bright
31/7/2024	15	7 jam	2,14	Bright

Table 4. 3 Productivity of Formwork Installation during Normal Working Hours

Date	Daily Work Volume (m2)	Working Time per Day	Productivity (m2/h)	Weather Description
16/7/2024	18,00	7 jam	2,57	Bright
17/7/2024	18,00	7 jam	2,57	Bright
19/7/2024	24,00	7 jam	3,43	Bright
23/7/2024	30,00	7 jam	4,29	Rain
24/7/2024	30,00	7 jam	4,29	Bright
25/7/2024	18,00	7 jam	2,57	Bright
31/7/2024	24,00	7 jam	3,43	Bright

Then, the average productivity of each job is as follows:

a) Average productivity of normal working hours on paving work

$$\overline{Xn} = \frac{x1+x2+x3+xn}{n}$$

$$\overline{Xn} = \frac{17,14+12,10+18,29+17,18+16,15+12,05+17,22}{7}$$

$\overline{Xn}$ = 15,733 from/jam

b) Average productivity of normal working hours on foundry jobs

$$\overline{Xn} = \frac{x1+x2+x3+xn}{n}$$

$$\overline{Xn} = \frac{1,43+1,71+2,00+2,43+2,29+1,57+2,14}{7}$$

$\overline{Xn}$ = 1,938 m3/jam

c) Average productivity of normal working hours in formwork installation work

$$\overline{Xn} = \frac{x1+x2+x3+xn}{n}$$

$$\overline{Xn} = \frac{2,57+2,57+3,43+4,29+4,29+2,57+3,43}{7}$$

$\overline{Xn}$ = 3,306 m2/jam

Overtime Working Hours Productivity

The productivity of the overtime hour workforce has been calculated using partial productivity measurements can be seen in Tables 4.4 and 4.5.

Table 4. 4 Paving Productivity during Overtime Working Hours

Date	Daily Work Volume (tons)	Hours of Work Per Day	Productivity (tons/hour)	Weather Description
4/7/2024	136,06	11 jam	12,37	Bright
6/7/2024	124,79	9 jam	13,87	Rain
9/7/2024	75,74	3 jam	25,25	Bright
12/7/2024	34,76	5 jam	6,95	Bright
14/7/2024	92,94	4 jam	23,24	Bright
23/7/2024	119,24	8 jam	14,91	Rain
25/7/2024	73,08	4 jam	18,27	Bright

Table 4. 5 Productivity of Retirement during Overtime Working Hours

Date	Daily Work Volume (m3)	Hours of Work Per Day	Productivity (m3/h)	Weather Description
16/7/2024	8,00	3 jam	2,67	Bright
17/7/2024	6,00	2 jam	3,00	Bright
19/7/2024	10,00	6 jam	1,67	Bright
23/7/2024	13,00	8 jam	1,63	Rain
24/7/2024	14,00	10 jam	1,40	Bright
25/7/2024	7,00	2 jam	3,50	Bright
31/7/2024	9,00	6 jam	1,50	Bright

Then, the average productivity of each job is as follows:

a) Average productivity of overtime hours in paving work

$$\overline{Xn} = \frac{x1+x2+x3+xn}{n}$$

$$\overline{Xn} = \frac{12,37+13,87+25,25+6,95+23,24+14,91+18,27}{7}$$

$\overline{Xn}$ = 16,406 from/jam

b) Average productivity of overtime hours in foundry work

$$\overline{Xn} = \frac{x1+x2+x3+xn}{n}$$

$$\overline{Xn} = \frac{2,67+3,00+1,67+1,63+1,40+3,50+1,50}{7}$$

$\overline{Xn}$ = 2.19 m3/hour

Difference in Productivity Score

The analysis of the productivity of normal working hours and overtime in paving and casting work on the shoulder of the road on the 7th day of observation is as follows.

1. Paving Productivity Difference

   σ Productivity = $\overline{XI}$- $\overline{Xn}$

   Σ Productivity = 16,406 15,733–

   = 0,672 from/jam

   Overtime to Normal Ratio = $\frac{16,406}{15,733}$ = 1.042

It can be said that the productivity of overtime work is 1.042 times greater than normal work productivity with a difference in productivity of 0.672 tons/hour for road paving work.

2. Productivity Difference in Road Shoulder Casting

   σ Productivity = $\overline{XI}$- $\overline{Xn}$

   Σ Productivity = 2.19 1.938–

   = 0.26 m3/h

   Ratio = $\frac{2,190}{1,938}$ = 1,131

It can be said that the productivity of overtime work is 1.131 times greater than normal work productivity with a productivity difference of 0.26 m3/hour for road shoulder cleaning work.

Wage Increase

Based on calculations, it was found that the overtime wages paid by the Banjarmasin – Martapura Road Reconstruction Project Section II were not in accordance with or lower than the applicable regulations, namely PP. No 35 of 2021. The comparison of total wages can be seen in Table 4.6

Table 4. 1 Comparison of Total Overtime Wages at Project Sites and Overtime Wages According to the Provisions of Government Regulation No. 35 of 2021

Workforce	Daily Overtime Wages at Project Sites Based on Wage Data	Daily Overtime Wages Should Be Based on Government Regulation No. 35 of 2021
Operator (3 persons)	IDR 4,712,400	IDR 9,060,000
Asphalt Daily Workers (2 people)	IDR 1,496,000	IDR 2,873,000

Workforce	Daily Overtime Wages at Project Sites Based on Wage Data	Daily Overtime Wages Should Be Based on Government Regulation No. 35 of 2021
Foundry Daily Workers (2 people)	IDR 1,258,000	IDR 2,397,000
TOTAL	IDR 7,446,400	IDR 14,330,000

5. CONCLUSION

Based on the results of research on the Banjarmasin – Martapura Road Reconstruction Project Section II that has been carried out, it can be concluded that:

1. The results of the labor productivity analysis with the partial productivity approach are:
   a. The average productivity value for normal working hours is 15,733 tons/hour for paving work, 1,938 m3/hour for road shoulder casting work, and 3,306 m2/hour for formwork installation work.
   b. The average productivity value for overtime working hours is 16,406 m3/hour for paving work and 2.19 m3/hour for road shoulder casting work.
   c. The productivity of overtime working hours has increased from the productivity of normal working hours. In road paving work, the productivity of overtime working hours is 1.42 times greater than the productivity of normal working hours. In road shoulder casting work, the productivity of overtime working hours is 1,131 times greater than the productivity of normal working hours.
   d. From the results of the calculations, the productivity of normal working hours shows a smaller value. This is because the volume produced during normal working hours is less.
   e. The obstacle that occurred was the asphalt and concrete production process from AMP (*Asphalt Mixing Plant)* which often experienced obstacles, namely machines that often broke down also because this road project was in the middle of a dense community so that the material process to the location often experienced delays.
2. Results of calculation of overtime hours wages in the field
   a. The overtime wages paid by the project are Rp. 4,712,400 for operators, Rp. 1,496,000 for daily workers for road paving and Rp. 1,258,000 for daily workers

for road shoulder casting. So that the total overtime working hour wage paid by the project is Rp. 7,466,400

b. From the results of the calculation, labor wages have increased after the implementation of overtime hours, which is 86.717%, which was originally Rp. 8,610,000 to Rp. 16,076,400.

3. The results of the calculation of the suitability of overtime hours wages based on Government Regulation No. 35 of 2021 are Rp. 9,060,000 for operators, Rp. 2,873,000 for daily workers paving roads and 2,397,000 for daily workers in road shoulder casting. So that the total wages that must be paid according to the regulations are Rp. 14,330,000. This wage is not in accordance with the total wages of workers applied in the project, which is only Rp. 7,466,400.

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