

# Proposed Determination of Work Criteria Standards on OMAX Ratio Performance to Increase Productivity

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**Abstract.** *This study focuses on measuring the productivity of PT.X, especially the welding and painting unit, based on the total realization of production, several employees, working hours, overtime hours, and lost hours of employees. The purpose of this study is to propose a strategy for improving the productivity ratio of the welding and painting unit, which is still below the standard by setting performance criteria standards. The method used is the objective matrix (OMAX) and root cause analysis (RCA) which is carried out using six ratios of productivity measurement and looking for the root cause of the ratio at a level below the standard. The results show that three ratios are still below the standard of the six productivity measurement ratios, such as ratios 2, 3, and 5. These ratios need to be improved by increasing the realization of production results, reducing the number of absent workers, and reducing the total working hours of employees every month. Based on the study results, improvements in the three ratios were able to increase the productivity index of PT.X's welding and painting units.*

**Keywords:** *objective matrix, performance standards, productivity, root cause analysis*

## I. INTRODUCTION

The development of technology and information in Indonesia, which is increasingly advanced, will bring competition for the industrial world increasingly tight. This competition occurs, especially in the manufacturing world. This becomes a reference for changing existing management and resources for the better. The benchmark that companies can use to improve management and resources is productivity.

Productivity in a company must always be considered and monitored because productivity can be one of the benchmarks for companies to be successful in resource utilization. Productivity measurement is a method to determine the

balance between human resources contributed and the output obtained.

Productivity has a relationship with effectiveness and efficiency in the use of resource (inputs) in producing output. The effectiveness and efficiency of the company can be used as a benchmark for productivity because the goal of productivity is effectiveness and efficiency itself (Nurmayetti, 2019).

Existing resources in a company must be used effectively by utilizing the organizer's skills (Ramadhani, 2004). There is a balance between the output obtained, and the input processed. Good productivity will help reduce the wastage of time, energy, and various other inputs that exist in a company. This will result in multiple benefits for the company, such as saving time, using power effectively, and achieving business goals that are carried out optimally.

Employee performance, commonly called human resources, is one indicator that has an important role for the company. One company that makes human resources an indicator that has an important role is PT. X. PT. X is a company engaged in manufacturing, especially the manufacture of hospital equipment. Industry competition is increasing every year. The number of requests from consumers, which is also increasing, is a boost for companies always to strive to increase productivity in existing production units. One of the existing production

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units at PT. X stands for Welding and Painting Unit. The increase in the number of consumer demands makes the production targets that must be achieved by operators also increase. However, the reality is that companies often do not meet the production targets that have been set. The following is the target data, realization, and production shortage of PT. X from June 2020 to May 2021.

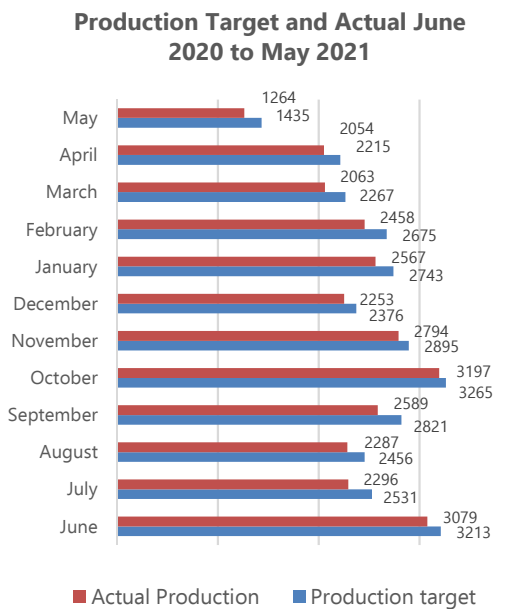


Figure 1. Production Target and Realization of PT. X

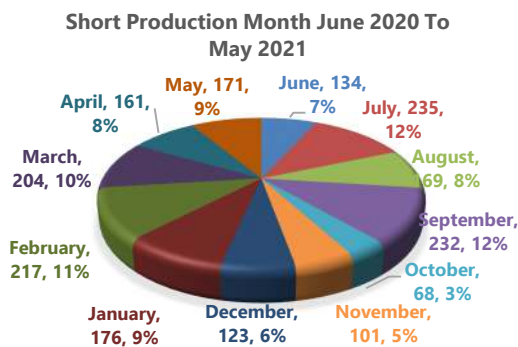


Figure 2. Production Shortage of PT. X

Figure 1 shows the production targets and realizations that have not yet been achieved. The blue diagram in Figure 1 shows the production target, while the orange chart shows the completion or achievement of production. The

production target always has more value than the production achievement. This indicates a difference between the production target set by the company and the production realization every month. The difference in numbers or the difference between the target and the production realization set by the company is between 3% to 12% in each period. The non-achievement of production in each period or month will cause a production shortage, as shown in Figure 2.

The shortage of products shown in the form of percentages and product units is shown in Figure 2. The larger the rate is shown in Figure 2, the more distant the achievement of production against the production targets that have been set. Of course, this needs to be improved and addressed because this problem can affect the company's productivity, so it is necessary to analyze the causes of production, which often does not meet the target.

Several factors can cause production not to meet targets, such as high employee lost hours, the number of defective products produced in production, too few employees, incorrect total working hours, material delays, damaged materials, or traffic jams during delivery. These factors have the same potential in decreasing and increasing productivity, so in conducting research, some of these factors will be very considered in measuring productivity.

Dominant factors that can cause production targets not to be achieved are material delays, damaged materials, and congestion at the time of delivery (dispatch). Researchers categorize these factors as external factors. However, other factors can cause production targets in a company not to be achieved, such as damage to production machines, maintenance of production machines, accumulation of goods, and employee attendance. These factors are categorized as internal factors (Sumarna & Rabbani, 2016). In this study, the factor that dominates the production target that is not achieved is the performance factor. An undisciplined workforce will make lost hours at the company high. The lost hours consist of absences, absenteeism, lateness, illness, and leave. However, internal

factors such as labor positively and significantly influence production results. The more workers there are in a company, the more production will increase. However, other factors can change the statement that the more workers, the more production will increase, namely, workers who are less capable of technology and workers with low human resources (Putra & Sobandi, 2019).

Difficulties in meeting production targets are common in companies. This can affect company productivity, and it is necessary to measure and analyze the causes of the problem. Several methods can be used in measuring productivity. One method of measuring productivity is the Objective Matrix (OMAX). Company productivity is influenced by many factors, both internal and external. These factors are very complex and interrelated. Therefore, OMAX is widely used by researchers to measure productivity. Measurement using OMAX involves many factors and ratios, so it is very suitable for companies to know their productivity level through OMAX. In this study, OMAX was used to analyze the factors that caused the production target not to be achieved. OMAX will show ratios with flawed criteria that cause the problem.

## II. RESEARCH METHOD

The research methodology used in this study has three main stages. The first stage of the research is a field study and literature study. The field study was conducted by conducting a preliminary survey at PT.X. Researchers conducted interviews with operators in the welding and painting unit at the field study stage. Interviews were conducted in several locations so that the information obtained through interviews came from in-depth information. Meanwhile, the literature study was carried out by collecting accurate sources of information from several references such as journals, the web, and other literature. In addition, at this stage of the literature study, researchers conducted in-depth learning with field supervisors at PT.X. The lesson discusses previous research with the same topic and in the same unit so that this research produces a new discussion compared to previous

research. Based on the stages that have been carried out, the problems and objectives of the research can be formulated.

The second stage of research is data collection and processing. Primary data and interviews with the parties concerned were conducted to obtain some views on current conditions. The parties selected as resource persons were the head of a production, the welding, and painting unit, and the welding and painting unit, operator. Data processing in this study was carried out using the objective matrix (OMAX) method as a tool to measure the productivity level of the welding and painting unit.

Measurement of productivity using the Objective Matrix (OMAX) can be done using six ratios, including (Setiowati, 2017):

$$1. \text{Ratio 1} = \frac{\text{Total Production}}{\text{Total Good Products}} \quad (1)$$

$$2. \text{Ratio 2} = \frac{\text{Total Production}}{\text{Total workforce}} \quad (2)$$

$$3. \text{Ratio 3} = \frac{\text{Total Production}}{\text{Total Working Hours}} \quad (3)$$

$$4. \text{Ratio 4} = \frac{\text{Total Overtime Hours}}{\text{Total Working Hours}} \quad (4)$$

$$5. \text{Ratio 5} = \frac{\text{Total Absent Labor}}{\text{Total Labor}} \quad (5)$$

$$6. \text{Ratio 6} = \frac{\text{Total Defective Products}}{\text{Total Production}} \quad (6)$$

The standard performance and performance scale of the OMAX method consists of a scale of 1 to a scale of 10. Calculating the average for each performance ratio is placed at level 3. Then the smallest scale obtained from the smallest value when calculating the ratio is set at level 0. the company wants to achieve is placed at level 10. When level 0, level 3, and level 10 have been filled, the next step is to determine level 1 to level 3 and level 3 to level 10. This determination is called performance scale calculation. Determining the scale at each level is done using the following formulation (Avianda, Yuniati, and Yuniar 2014).

$$\text{Level 1} - \text{level 2} = \frac{\text{level 3} - \text{level 0}}{(3-0)} \quad (7)$$

In addition, the formula used to determine the value of level 3 to level 10 is as follows.

$$\text{Level 4 – level 10} = \frac{\text{level 10–level 3}}{(10-3)} \quad (8)$$

Levels 1 to 10 in the calculation of productivity in this study can be seen in Figure X. The values listed in the matrix are generated from analyses using formula (7) and formula (8).

Quality Ratio (1)	Efficiency			Effectivity		
	Ratio (2)	Ratio (3)	Ratio (4)	Ratio (5)	Ratio (6)	
130.061	28.959	22.875	42.125	36.233	4.865	10
126.190	27.315	21.273	39.285	34.042	4.593	9
122.320	25.671	19.672	36.446	31.850	4.321	8
118.449	24.027	18.070	33.606	29.659	4.049	7
114.578	22.384	16.468	30.767	27.468	3.777	6
110.707	20.740	14.866	27.927	25.277	3.505	5
106.837	19.096	13.265	25.088	23.085	3.233	4
102.966	17.452	11.663	22.248	20.894	2.961	3
102.685	14.688	10.358	19.524	17.311	2.667	2
102.404	11.923	9.052	16.799	13.728	2.374	1
102.123	9.159	7.747	14.075	10.145	2.080	0
18.405	17.791	17.791	15.337	14.724	15.951	Weighted score

**Figure 3.** OMAX Matrix

The measurement of the productivity index is carried out to know the increase or decrease in the performance ratio during the study period. The productivity index can be measured minus the standard by the current performance indicator (PI(t)). Performance indicators (PI) show the percentage increase or decrease to the current performance indicators (PI(t)). The formula for calculating the index of productivity (IP) is as follows (Avianda et al. 2014).

$$IP = \frac{\text{Current Performance Indicator} - 300}{300} \times 100 \quad (9)$$

The third stage of the research is analyzing productivity measurement using Root Cause Analysis (RCA). Problems in a company need to be investigated and analyzed in a structured manner so that the things that cause problems can be identified and the actions that need to be taken to eliminate problems can be identified. The method used to identify issues and find appropriate measures is Root Cause Analysis (RCA). Various approaches, tools, and techniques to identify root causes of problems can be found in RCA (Wangen et al. 2017).

The RCA method consists of five stages (Kuswardana, Andikha, Novi Eka Mayangsari 2017), Namely: Problem identification (problem

identification stage is carried out to reveal the problem in detail and clarity regarding what happened what was the cause of the problem); Data analysis (data analysis stage is a critical stage that must be passed before a researcher looks at the factors that cause problems); Causal mapping (this stage is carried out using the "the five why's" method. This method contains five questions that will be used as a tool to study the things that underlie the problem); Identification of root causes (if the analysis has exceeded its capacity in finding the root of the problem, the researcher will eventually identify the facts that exist in the community); Recommendation or implementation (this stage is carried out to validate the problem will arise from the root cause and ensures that corrective steps are appropriate to manage what is causing the pain, or it will become a new problem).

The RCA method has been analyzed by three studies regarding its usefulness and limitations. All three studies have agreed that the RCA method has a constraint that focuses on the dynamic error of the researcher. Root Cause Analysis has proven to be a method that produces decisions as expected in theory. This is because many recommendations are generated from this technique and can prevent the same thing from happening again (Martin-Delgado et al. 2020). The performance standards are determined through simulations based on critical points in the ratio measure. This simulation is based on the objective matrix ratio (OMAX).

### III. RESULT AND DISCUSSION

This section will discuss the results of measurement and analysis of productivity using the factual matrix (OMAX) and further investigation of productivity that is at a poor level using Root Cause Analysis (RCA). Based on the calculations and analysis that has been done, it can be concluded about the root of the problem and the proposal for the productivity ratio of PT. X, which is at an insufficient level.

#### Objective Matrix (OMAX)

The calculation of productivity using the objective matrix (OMAX) method involves six

ratios, including ratio one regarding total production to total good product, ratio two regarding total production to the entire workforce, ratio three regarding total production to full working hours, ratio four regarding total hours overtime to total hours worked, a ratio of 5 regarding the entire absent workforce to the real force and a ratio of 6 regarding the total defective products to the whole production.

Productivity calculations show that several ratios are still at an insufficient level. These ratios are indicated by ratio 2, ratio 3, and ratio 5. In the graph, each ratio has been marked with a red line that shows the minimum percentage that must be achieved each period to be included in the excellent level. The existence of several ratios that are still at a lousy level indicates that it is necessary to conduct further analysis of the causes and suggestions that can make each productivity ratio within the suitable criteria. The following are the results of the calculation of productivity ratios at PT.X.

Figure 4 shows ratio one, which compares the number of good products and the total number of products produced. The highest value was obtained in the August 2020, which was 104.04%, where the total products made were 2287, and the sound effects were 2198. Compared with the initial stage value of 102.12%, there is an increase of 2%. The lowest value was in January 2020, with a ratio of 102.12%, where the total production was 3079, and the excellent product was 3015. The higher the ratio 1, the better the performance of ratio 1. The standard value for ratio 1 is 102.96%. When the ratio exceeds the value of 102.96%, the balance is said to be good, but it is said to be harmful if it is below the standard value. The red line on the graph shows the normal weight at ratio 1. In this ratio, points experience a significant decline, namely in April and May 2021. This ratio is influenced by good products and the total produced product. The number of good products produced depends on the thoroughness and focus of the workers. In April and May 2021, there were restrictions on community activities (PPKM) launched by the DIY government to control the rate of Covid-19 (Dan et al. 2020). In April and

May 2021, the company also implemented WFH (Work From Home) and WFO (Work From Office) due to the company's increasing number of Covid-19 cases. This shows a link; workers have decreased focus due to high Covid-19 chances and government policies that impose restrictions on activities that affect companies to carry out a work shift system.

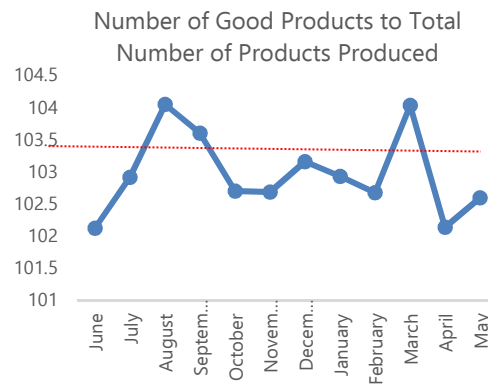


Figure 4. Ratio Graph 1

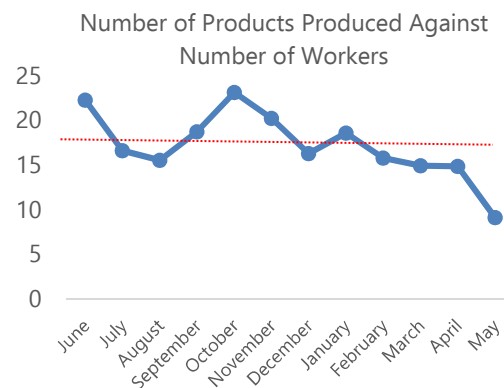


Figure 5. Ratio Graph 2

Figure 5 shows ratio two, which compares the number of products produced and the amount of labor used. This ratio states the level of speed of labor production. The highest value was obtained in the balance for October 2020, which was 23.16%, where the total products produced were 3197 units with a workforce of 138 people. Compared with the initial stage value of 22.31%, there was an increase of 3.83%. The lowest value is in May 2021, with a ratio of 9.15%, where the total production is 1264 units with a workforce of 138 people. Compared with the initial stage value,

there was a decrease of 58.948%. The red line on the graph shows the standard value for ratio 2. The standard weight for ratio 2 is 17.45%. If the value of the ratio 2 exceeds 17.45%, the better the ratio performance. The greater the value of the ratio 2, the better the performance.

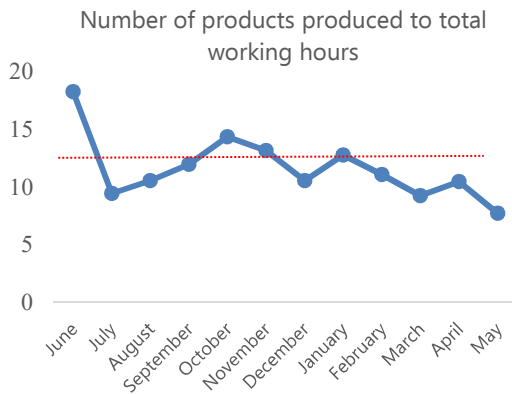


Figure 6. Ratio Graph 3

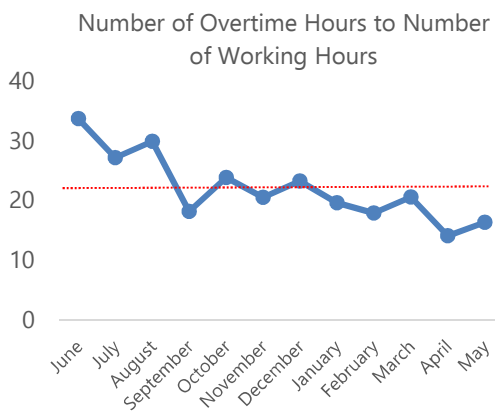


Figure 7. Ratio Graph 4

Figure 6 shows ratio three, which compares the number of products produced and the total hours worked. This ratio states the amount of production per hour. The highest value was obtained in the balance for June 2020, 18.3%, where the total products produced were 3079 pieces with a full working hour of 168.25 hours. The highest value was in the early period of the study. The lowest value is in May 2021, with a ratio level of 7.74%, where the total production is 1264 pieces with a total of 163.15 working hours.

Compared with the initial stage value, there was a decrease of 57.66%. The red line on the graph shows the standard weight at ratio 3. The standard value at ratio 3 is 11.66%. If the ratio 2 exceeds the normal value, the performance will be better.

Figure 7 shows ratio four, which compares the number of overtime hours and the total number of hours worked. The highest value is the smallest ratio percentage value, namely in April 2021, with a ratio rate of 14.07%, where the number of overtime hours is 27.56 hours. Compared with the initial stage value, there was an increase of 58.23%. The lowest value was in June 2020, which was 33.70%, where the number of overtime hours was 56.7 hours. The lowest value was in the initial period of the study, namely June 2020. The red line on the graph shows the standard value for ratio 4. The standard weight for ratio 4 is 22.24%. The lower the value of the ratio 4, the better the performance. So, if the ratio value on the graph is below the red line, it shows the better the ratio's performance.

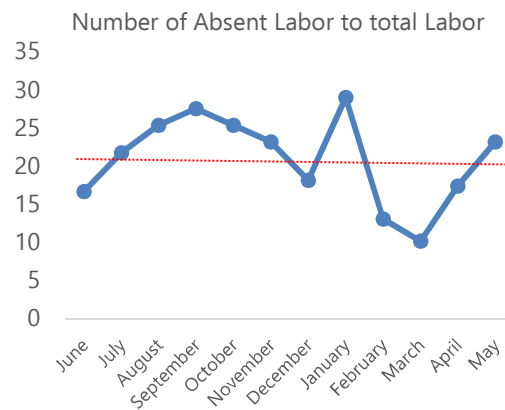


Figure 8. Ratio Graph 5

Figure 8 shows the five ratios, which compare the number of absent TK and the total number of workers. The highest value is the smallest ratio percentage value, namely in March 2021, with a ratio level of 10.14%, where the absent workforce is 14 people. Compared with the initial stage value of 16.66%, there was an increase of 39.13%. The lowest value is in January 2021, which is 28.98%, where the number of absent workers is 40 people. Compared with the



initial period value of 16.66%, there was a decrease of 73%. The higher the value in the ratio 5, the worse the performance. The red line on the graph shows the standard weight at a ratio of 5. The standard value at ratio 5 is 20.89%. If the ratio value on the chart is below the red line, the better the ratio's performance will be. There was a significant increase in the ratio in January 2021. This shows the company's unfavorable condition. This condition is related to the Java-Bali PPKM on 11 to 25 January 2021, which the DIY central government launched (Pratiwi and Hidayati 2021). This is the background for the company to carry out a work shift system for workers so that the number of absent workers has increased.

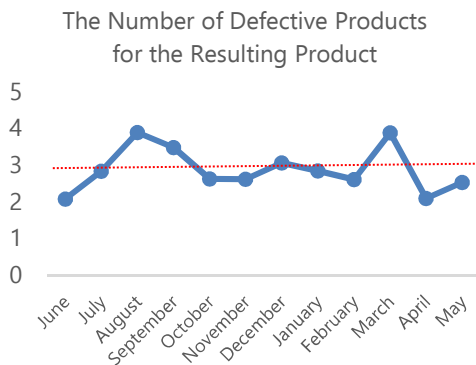


Figure 9. Ratio Graph 6

Figure 9 shows the ratio six, which compares the number of defective products and the total number of products produced. The highest value is the smallest percentage ratio, namely in June 2020, with a rate of 2.08%, with 64 defective products. The highest value was in the early period of the study. The lowest value was in August 2021, which was 3.89%, where the number of defective products was 89 pieces. Compared with the initial stage value of 2.08%, there was a decrease of 87.22%. The lower the weight in ratio 6, the better the ratio performance. The red line on the graph shows the standard value at ratio 6. The standard value at ratio 6 is 2.96%. If the ratio value is below the red line, the better the ratio performance will be. There was a significant increase in the ratio in March. The increase in the ratio in March indicates the poor performance of

the balance. Defective products in March were caused due to the high transmission of Covid-19 at the company. The head of the production unit conveyed this.

The productivity index is used as a reference for companies to carry out strategies that can be done to improve the work performance of employees at the company. The following is a graph of the current productivity index.

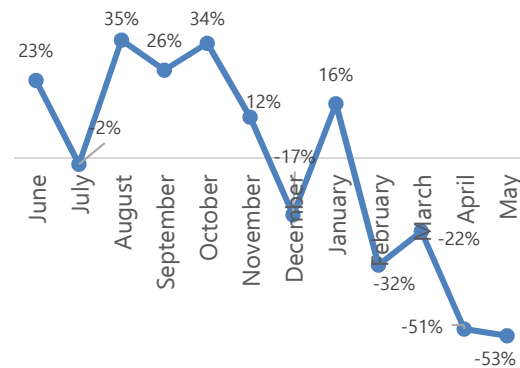


Figure 10. Productivity Index Graph

Figure 10 shows the productivity index values for several periods from June 2020 to May 2021. There are still several indices that are at minus values. The poor productivity index is caused by several ratios still in the wrong criteria. This ratio shows that the lost hours of employees are still in the poor category. Lost hours of employees consisting of employee attendance that exceeds the allowance must be corrected to increase the company's productivity index. Productivity is good or bad conditions; efforts should still be made to increase productivity. This is done to prevent the occurrence of consumptive behavior that can increase the costs incurred by the company. Several calculations can be assumed to increase productivity, such as the same amount of production is obtained with the same resources, more production results are obtained with fewer resources, more production results are obtained with the same resources, production results are obtained much more is received with more resources (Sarjono, 2001).

**Root Cause Analysis (RCA)**

The calculation of productivity using the objective matrix (OMAX) method shows three

ratios below standard or poor criteria. The three ratios refer to the high lost hours of employees (illness, leave, leave, lateness, absenteeism). It is necessary to carry out a more in-depth root cause analysis to make suggestions for improvement.

Root cause analysis is an essential part of an overall understanding of "what happened." Seen based on "early understanding" of a problem and identify questions that do not have answers and information gaps. Collecting information can be done through interviews with employees who have direct or indirect involvement, checking the surrounding conditions where problems arise and observing. The information obtained will be the "final understanding" and then used to analyze "why" the problem occurs (Doggett, 2005).

**Identification of problems.** The problem is that the level of productivity is still poor because the lost hours of employees are still high. The lost hours of employees at the company consist of working hours used for permits, sick leave, leave, being late, and being absent from work. The research prioritizes the problem of high employee lost hours because the impact on company

productivity is quite significant. The issue regarding high employee lost hours can be concluded based on interviews that have been conducted with the informants. The resource persons in this study were the head of the production division, the welding and painting unit, and the welding and painting unit operators.

**Identification of Causes.** Before identifying the root cause of the company's high employee lost hours, researchers must analyze what factors can cause an employee to frequently take leave, leave, be late, or be absent from work. Several factors can cause employees to frequently take leave, leave, be late, or miss work, such as working hours that start too early, the opportunity to do so, supervision that is not too strict, or the influence of other employees.

**Identify Root Cause.** The research was conducted using a five why analysis to dig deeper into the real root of the problem. The root cause of the problem can be identified by asking "why" five times repeatedly to a point where the answer to the question has shown a root problem (Serrat, 2017).

Based on interviews conducted with employees of PT Mega Andalan Kalasan, especially the welding and painting units, it can be seen in Figure 11. Interviews to find the root cause of the problem regarding high employee lost hours were carried out to 21 employees out of 100 employees. Various reasons make the lost hours of employees have a high percentage. These causes can be seen in Figure 11. From the grounds that the informants have explained, several reasons have a high rate, and this is one of the factors considered in determining the root cause of the problem.

Further discussion of the causes that the resource persons have mentioned to find out the root cause of the problem of high employee lost hours was carried out. The determination is made by looking at the highest percentage and input from the company. The decision of the root cause of the problem has been verified and approved by the company. The company believes that the results of the analysis are by the situation. The root cause of the problem can be seen in Figure

**Table 1.** Results of Interviews Regarding Lost Hours of Employees

No	Results of Interviews Regarding Lost Hours of Employees	%
1	Attendance check is done manually	13%
2	No sanctions	12%
3	Recruitment of permanent employees is very rare	11%
4	Working hours start too early	10%
5	Attending a job interview	8%
6	There are things outside of work	7%
7	Working as a driver	7%
8	Attendance check is done during the day	6%
9	Status is still an intern from long ago	6%
10	Have other activities before leaving	5%
11	Sick	4%
12	Fatigue	3%
13	Bad weather	2%
14	Vehicle Strike	2%
15	Wake up late	2%



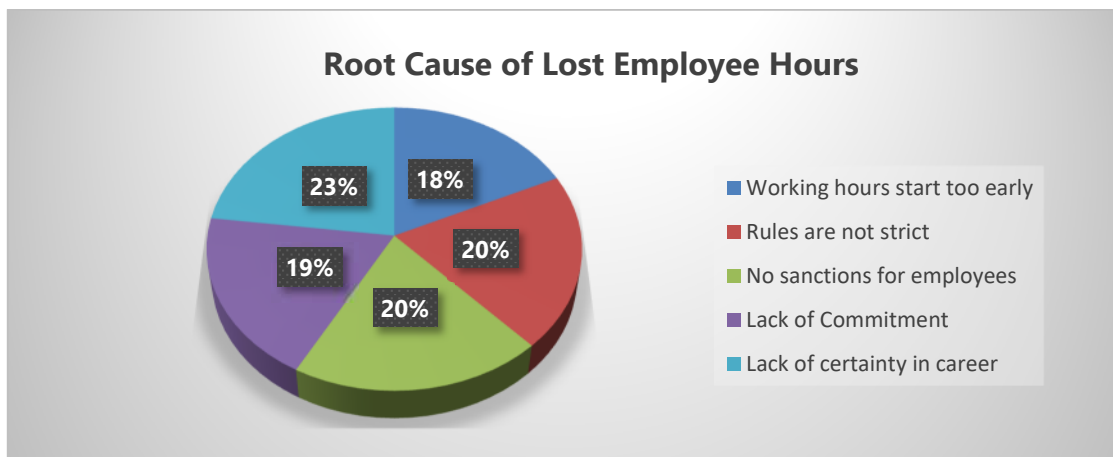


Figure 11. Root Cause of Lost Employee Hours

11. The root cause of the problem of high lost hours consists of working hours that start too early with a percentage of 18%, company regulations that are less strict with a ratio of 20%, no sanctions for employees with a rate of 20%, a lack of employee commitment with a percentage of 19% and a lack of company certainty in a career by 23%.

Further discussion regarding the root cause of the problem of high lost hours needs to be done so that the company has an overview of strategies to overcome these problems. Five root causes will be discussed in this study. One of the causes of high employee lost hours is an inappropriate work system. The company makes a working system to optimize the active power of industrial machines and increase company profits. The work system starts at 8 a.m. Until 4 p.m. It has several advantages in terms of physiological and social aspects. Working hours too early make employees often late for work or deliberately absent from work for breakfast. This condition is related to the ratio of 5, which is about the number of missing workers. The high number of absent workers can reduce product performance. In addition to working hours that start too early, the firmness of an employee is also essential in the company so that employees have a handle on acting and think about the risks of the actions taken.

The firmness of a superior greatly influences employee discipline in a company. A boss must have a brave and decisive nature to

consequences, disciplinary employees. The risk for a boss who is not strict with correctional employees is that more and more employees will have penal attitudes because they think that the rules and sanctions are no longer valid (Nazir, Kunci, and dan Karyawan 2019). This can cause employees to act arbitrarily at work. Employees can go home early or leave late without thinking about the risks involved. This can affect the total working hours of employees each month, which is not on target. This condition is related to the OMAX calculation, namely the ratio 3, which is in the wrong criteria. The firmness of an employee needs to be supported by the sanctions applied by the company. Sanctions have an essential role in employee discipline.

The company must provide sanctions for employees who have violated regulations and carry out strict supervision so that employee performance can improve (Kerja and Gaya n.d.). Companies must have firmness and accuracy to make decisions regarding what sanctions are appropriate for employees so that employees no longer violate the rules and regulations and no longer make similar mistakes (Krisnanda & Sudibya, 2014). Strict sanctions will bring up the discipline of an employee. Employees who have a good field will also create a high commitment to the company. An employee's responsibility will be significant for the company so that the employee continues to provide maximum performance for the company

An employee's commitment will appear based on his organization's desires, needs, and obligations as a place to work. Organizational commitment is a condition that indicates that an employee is in favor of a particular organization and has goals and a desire to remain in the membership of the organization concerned. Commitment in an organization or company can be built if an employee can develop three interrelated attitudes with the organization such as an understanding of the company's goals, a feeling of being involved in the work being done, and a feeling that the company is a place for him to work and live (Januarti, 2019). An employee's commitment must also be strengthened by clear career development. An employee guaranteed a career will have a high responsibility to maintain his job.

Career development is something employees want because they think that the better the position, the more prosperous life will be. The thing that underlies career development in a company is promotions carried out by the superiors of each section. A manager often prioritizes employees with a high level of education (diploma and bachelor's degree) compared to employees with vocational education to occupy positions. It is known that even though an employee is a permanent employee who has worked for a long time, his educational background does not match the criteria for career development. The employee still cannot participate or get career development opportunities. In this case, the superiors should provide career opportunities to employees who are only high school graduates with the aim that employees can develop careers according to their expertise (Natalia & Netra, 2020). Lack of career certainty makes employees often leave work to look for side jobs or more promising jobs. This condition is related to the OMAX calculation at a ratio of 5, namely the number of absent workers who are still in flawed criteria.

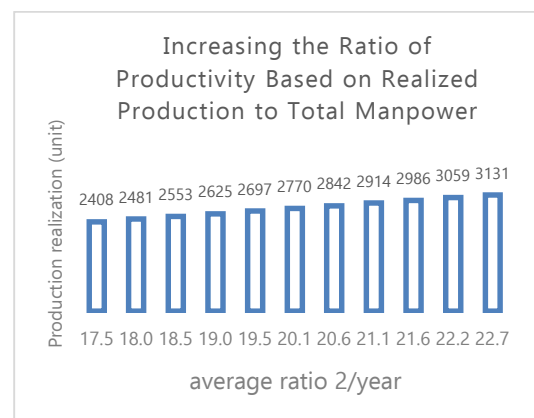
**Maintenance plan**

The ratios in calculating productivity using the objective matrix (OMAX) method have several criteria, namely excellent and bad criteria. Increased productivity in ratios with bad

standards can be carried out with four calculation assumptions, including with a smaller number of resources the same amount of production is obtained, with fewer resources, more production results are obtained, with the same number of resources, more production results are obtained, and with more resources, much more production results are obtained (Sarjono, 2001).

After the root cause of the lost hours of employees who have a high percentage is known, the next researcher will analyze practical corrective actions to reduce the high lost hours of employees before entering into the discussion regarding disciplinary actions to reduce high lost hours. The researcher will perform a data simulation of the OMAX productivity measuring ratio component, which is below the standard criteria as a performance standard setting based on the OMAX ratio. These components are the total production output, the number of absent workers, and the total working hours of employees. These results will be used as standard performance criteria for PT X.

Furthermore, it is necessary to simulate the data; some ratios are still flawed criteria. Data simulation needs to be carried out to set standard criteria for ratios 2, 3, and ratio 5, which were initially in the bad criteria to become good criteria so that the ratio performance will increase. The following is a data simulation carried out to increase the ratio 2, ratio 3, and ratio 5 to achieve good criteria.



**Figure 12.** Simulation Data of Ratio 2

Figure 12 shows the data simulation at ratio 2, the ratio of the product produced to the

number of workers. The higher the ratio value, the better the productivity performance. Productivity is in good criteria when the ratio in one period/month reaches 19.09%. When the ratio comes to 19.09% for each period/month, the average percentage of 2 per year goes 22.70%. With an average ratio of 2 per year of 22.70%, the company must increase production output to 3131 units with a total workforce of 138 people per period/month. When ratio 2 is in the flawed criteria, the company only produces 2408 units every month with 138 workers.

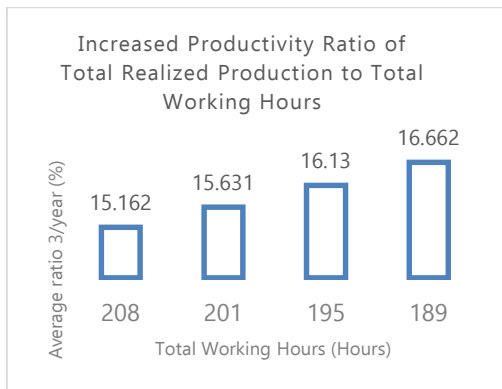


Figure 13. Simulation of Ratio Data 3

Figure 13 shows the simulation data at a ratio of 3, regarding the product produced to the total hours worked. The higher the ratio value, the better the productivity performance. Productivity is in good criteria when the ratio of each period/month reaches 13.26%. When ratio 3 comes 13.26% per period/month, the company can achieve an average balance per year of 16.66%. With an average ratio of 3 per year of 16.66%, the company must reduce the total working hours of employees to 189 hours per period/month. When the balance is in the flawed criteria, the total working hours of employees each month is 208 hours. It is not commensurate with the amount of production achieved. With a total of 189 hours of work in a month, workers can work 8 hours a day and have 1 hour of overtime if needed. The 8 hours workday is very effective for workers to work with focus and good results.

Figure 15 shows the simulation data at a ratio of 5 regarding the number of absent

workers with the total number of workers. The smaller the ratio value, the better the performance ratio 5. Productivity is in good criteria when the ratio for each period/month does not reach a value of 20.89%. Ratio 5 can be good for a ratio per year of 15.3%. When the company can achieve an average annual percentage of 15.3% per year, the number of absent workers should not exceed 21 employees out of 138 employees in each period/month.

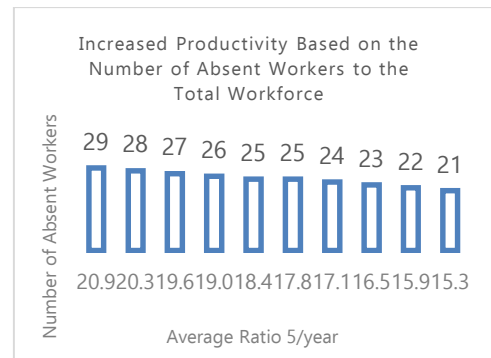


Figure 14. Simulation of Ratio Data 5

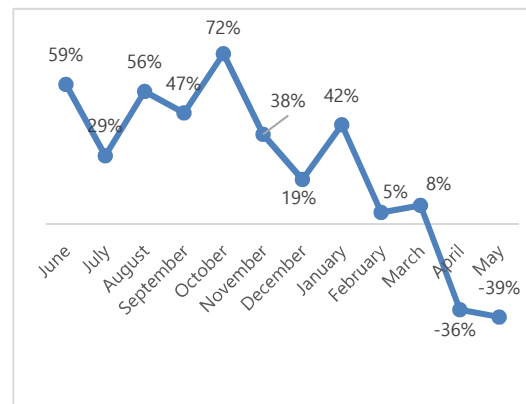


Figure 15. Graph of Productivity Index Based on New Performance Standards

Figure 15 shows the productivity index after simulating the data to increase the ratio 2, ratio 3, and ratio 5, which previously had poor criteria, overall productivity has increased. Five periods had a value below 0% in the previous productivity index. However, after implementing the new performance standards, the productivity index increased, and there were only two periods below 0%. In both periods, which were below 0%,

they also continued to grow compared to the productivity index before using the performance standard.

**Table 2.** Comparison of Productivity Index

Month	Current Productivity Index	Productivity Index Using Performance Standards
June	23%	59%
July	-2%	29%
August	35%	56%
September	26%	47%
October	34%	72%
November	12%	38%
December	-17%	19%
January	16%	42%
February	-32%	5%
March	-22%	8%
April	-51%	-36%
May	-53%	-39%

Table 2 compares the productivity index before using the performance standard and after utilizing the performance standard. The productivity index using performance standards has a higher percentage than before. This shows that the productivity condition improves when the company uses performance standards. After using the performance standards in April and May, the productivity index is still at a minus value, and the changes still don't seem significant. This is because the realization of production in April and May is still far from the specified performance standard.

The next step is to provide effective improvement suggestions for companies to overcome high employee lost hours (permission, illness, leave, late, absenteeism) with several actions such as making policies that regulate employee attendance. The approaches made contain employee attendance procedures and contain appropriate follow-up from the company to employees who are absent too often. Employee discipline is the primary benchmark used to see employee performance based on their attendance. Based on attendance data owned by the company, a company can regulate employee attendance by considering obligations,

prohibitions, and sanctions (Sikumbang, Habibi, and Pane 2020).

Companies need to give rewards for employees' performance and hard work so that employees feel more valued and can reduce the possibility of being absent from work. In addition, it can strengthen the commitment of employees to continue working at the company. Appreciation can be used as a reinforcement for someone to stay afloat in the conditions that are being faced (Effendi 2012).

Provide clarity regarding employee career development patterns. Can provide motivation and strengthen employee commitment to self-development to achieve career targets obtained (Melinda and Zulkarnain 2004). Career development in a company, if not managed properly, can make employee commitment to below and make employees have a high interest in getting out of the company (Ramli & Yudhistira, 2018).

#### IV. CONCLUSION

Proposals for setting performance standards based on below-standard ratios as a strategy to increase productivity are urgently needed. This is very relevant to the root cause obtained from research sources. The reality that occurs in the field is related to the results of the ratio measurement, so the proposals given have an excellent opportunity to increase company productivity. Companies need to increase the amount of production, decrease the total working hours of employees and decrease the number of absent workers every month to increase the company's productivity index. This research is a development of previous studies. Most of the earlier studies discussed productivity measurement without conducting simulations to find the right strategy to increase productivity. There are studies that state that productivity can be increased by taking into account the criteria of efficiency, effectiveness, and inferential (Bahrudin and Wahyuni 2018). This research explains in detail that through these criteria, there are still references to an action that can significantly increase productivity, such as an increase in the

amount of production. A decrease in the total working hours of employees and a decline in the number of absent workers.

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