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THE INFLUENCE OF MACHINE MAINTENANCE AND RAW MATERIAL INVENTORY ON THE SMOOTHNESS OF PRODUCTION PROCESSES AT PT INDOMETAL SEDJATI

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Abstract

This study aims to test and analyze the effect of machine maintenance and raw material inventory on the smooth production process at PT. Indometal Sedjati. This study employs an associative research approach, utilizing a quantitative method. Data collection is done through a questionnaire, incorporating both primary and secondary data. The research population consists of 100 respondents, with a non-probability sampling technique being employed. Data analysis includes validity test analysis, reliability test, classic assumption test, multiple linear regression test, and hypothesis testing, utilizing SPSS Version 22 software. The results of this study indicate that partially machine maintenance has a positive and significant effect on the smooth running of the production process with a t_{value} of 5.049 > 1.660 and a significance value of 0.000 <0.05, raw material inventory has a positive and significant effect on the smooth running of the production process with a t_{value} of 5.006 > 1.660 and a significance value of 0.000 <0.05. In the F test, if the significant value is 0.000, then Ho is rejected and Ha is accepted. This indicates that machine maintenance and raw material inventory have a significant effect on the production process. The fvalue is 108.520, which is greater than 3.09, and the significant value is less than 0.05.

Keywords: *Machine Maintenance, Raw Material Inventory, Smooth Production Process*

1. INTRODUCTION

The development of manufacturing industry technology in Indonesia is now growing very rapidly. This spurs on needs and wants both in quantity, variety of types, and quality levels. Technological developments pose a challenge for companies to be able to meet needs and desires, namely by increasing the ability to provide and produce (Cimini et al., 2017). Every company must always strive to make gradual and sustainable improvements in order to be able to compete in the era of globalization.

The procedures required to make goods (both physical goods and intangible services) marketable are also part of the production process. Finished products need to have added value for the market to accept them. Economic activities should be as productive and effective as possible, with minimum loss or waste (Masyhuri, 2007). To maximize production output and profits in this situation, entrepreneurs will manage the use of production variables in the manufacturing process. Effective manufacturing procedures will produce the highest possible output value. The quantity of inputs needed to achieve a certain amount of output, or production efficiency (Widowati, 2007).

The manufacturing industry contributed the most to the increase in Indonesia's economic growth, which reached 7.07% in the second quarter of 2021. This sector was the source of the highest growth, which amounted to 1.35%. In this period, the manufacturing sector itself recorded a growth of 6.91% despite experiencing pressure due to the Covid-19 pandemic. The Ministry of Industry (*Kemenperin*) focuses on supporting the manufacturing sector to rise from contractionary conditions and return to positive

growth, and become a contributor to national economic growth. Although the Ministry of Industry as an industrial coach is only supported by a minimal budget, the manufacturing sector is still able to make a maximum contribution, said Minister of Industry Agus Gumiwang Kartasasmita in Jakarta, (6/8).

According to Assauri (2018), the production process is a way, method and technique to create or increase the usefulness of a good or service by using existing resources (labor, machinery, materials, funds). The good and bad of a production in a company will affect the implementation of the production process in the company concerned. A company always wants its production targets to be met properly, but due to various problems it can hinder the production process so that the achievement of production targets is often far from expectations. The cessation of a production process is often caused by problems in machinery and raw material supplies. According to Yamit (2011), the production process is essentially a process of changing (transformation) of materials or components (inputs) into other products that have higher value or in the process of adding value.

In carrying out the production process, the company certainly needs qualified machinery and raw material supplies that cannot be separated from problems related to the production process. With the company guaranteeing qualified machinery and raw material supplies, a production process will run smoothly and will increase the resulting production results. Therefore, in order to obtain good production results, of course, when carrying out its production process activities, the company must pay attention correctly and consistently. According to Sentosa & Trianti (2017), the production process is a concept in creating or adding to the function of goods or services involving available sources of labor, machinery, materials and funds.

Maintenance of machinery and equipment of a factory is one of the factors that determine whether the machine is reliable to be operated for a longer period of time or a predetermined period of time (Yurisman, 2016). The desired machine productivity is not achieved if Machine Maintenance is not organized in a structured manner. According to Assauri (2018), maintenance is an activity to maintain or maintain factory facilities or equipment and make necessary repairs or adjustments / replacements so that there is a satisfactory state of production operations in accordance with what is planned. Preventive replacement is carried out by re-setting the time interval for the next preventive replacement according to a predetermined interval if damage occurs that requires replacement action. Currently, the maintenance method carried out by the company is a corrective maintenance method, when there is damage to a machine component, repair or maintenance is carried out. As a result, the production process stops while repairs are made, so that the losses experienced are idle time and costs due to damage. Therefore, to ensure that this machine functions properly, it is necessary to have a maintenance system or maintenance on a regular and planned basis in order to anticipate as soon as possible when damage occurs so as to minimize machine costs and idle labor costs and not disrupt the course of a production process. In this case, one method that can be used is the age replacement method which aims to determine the maintenance interval time and component replacement in accordance with the age of the component. This research is devoted to mixer machines that have the highest level of damage. So that it can reduce the costs incurred due to damage.

Raw material inventory is a major factor in the company to support the smooth production process, both in large and small companies. Errors in determining the amount

of investment in controlling raw materials that are too large compared to the company's needs will increase interest expenses, maintenance costs and deviations in warehouses, as well as the possibility of depreciation and quality that cannot be maintained, all of which will reduce company profits. Vice versa, raw material inventories that are too small in the company will also experience losses. In inventory management is a way of organizing the procurement, receipt, and allocation of inventory materials in a business that is being run so that the business becomes effective, especially in the costs incurred for the smooth running of the business and its production. Inventory can be stored at production points (the first level in the inventory system), then at national or regional warehouses (second level), then at distribution centers (third level), and so on. And each stage where inventory is stored is an inventory system. This system with multiple tiers of inventory is known as an inventory system. This system with multiple tiers of inventory is known as a multi-tier inventory system. Coordination is required between product inventories at different tiers. Therefore, the inventory at each tier (except the last one) is used to replenish the next improved inventory.

PT Indometal Sedjati is a company engaged in the manufacturing industry that produces household cutlery such as spoons or forks and uses stainless steel raw materials. With companies engaged in manufacturing must have a good machine and raw material inventory, with the machine and raw material inventory in the production process in carrying out its operational activities, it can minimize errors and improve the results of the production process. The author found problems related to the production process which caused a decrease in production results at PT Indometal Sedjati.

Based on the data, the production process at PT Indometal Sedjati has decreased by 3.48% in 2022 and has increased in 2023 by 3.88%. According to Dian Kurniawan S.H, there are several factors that influence the movement of the percentage of the production process, among others, due to the Covid-19 transition period, at which time the government established PPKM. In addition, other factors that influence the decline in production results in 2022 are the occurrence of damage to several machines and the lack of raw material inventory available at the company.

One of the factors that can affect the production process includes raw material production machines and the availability of these raw materials. The machine used for production must be qualified in order to produce goods that meet the standards. For this reason, the company must carry out maintenance actions on production machinery so that production activities can be guaranteed continuity. In terms of maintenance, it is an important variable in maintaining production stability.

Based on the above research with the existing phenomena, the objectives to be achieved in this study are to determine the effect of Machine Maintenance, the effect of Raw Material Supplies on the Smooth Production Process at PT. Indometal Sedjati. By analyzing these factors, the project seeks to identify any issues or bottlenecks in the supply chain that may be hindering the production process and propose solutions to optimize raw material management. Overall, the research project aims to provide valuable insights into the relationship between Machine Maintenance, Raw Material Supplies, and the efficiency of the Production Process at PT. Indometal Sedjati.

2. LITERATURE REVIEW

Assauri (2011), defines maintenance as the process of ensuring the proper functioning of factory facilities and equipment through repairs, adjustments, or replacements. This is done to ensure a satisfactory production operational situation in line with the planned objectives. In 2023, PT Indometal Sedjati has implemented a monthly maintenance and inspection schedule for their machines. This regular and continuous maintenance practice aims to enhance the quality and efficiency of the production process.

Regular and consistent machine maintenance is essential to keep the machine in top condition for optimal use (Çınar et al., 2020). Maintenance supports production operations for both manufacturing and non-manufacturing companies, ensuring a smooth production process. Although there are costs associated with maintenance, they are much more economical compared to the expenses incurred from machine damage.

Furthermore, the supply of raw materials plays a crucial role in the smooth production process of a company. The optimal supply of raw materials determines whether or not the production process runs smoothly (Suprapto & Sunarsi, 2020). Each company has its own unique inventory of raw materials, both in terms of quantity and the control process. In certain cases, companies adopt different approaches to inventory management. On one hand, some companies prefer to stockpile excessive amounts of raw materials (overstocking). However, this choice comes with significant costs such as storage expenses and the risk of material expiration. On the other hand, some companies aim to minimize the quantity of raw materials available in order to reduce inventory costs.

Smoothness in the production process is a determining factor for the efficiency value of the production process (Nearchou, 2011). Therefore, it is necessary to control the inventory of raw materials to reduce the risk in the production process. Raw materials are all raw materials that can be physically identified as part of the finished goods and can be traced to the finished goods simply and economically (Ramadhanty, 2021).

Optimal raw material inventory is something that must be considered in the procurement of raw materials (Yu et al., 2012). This optimal inventory requires planning how much raw material to buy, when raw materials are purchased so that the production process is not disrupted due to lack of raw materials (Taroreh, 2016). Without the supply of raw materials, the company will be faced with the risk of not being able to fulfill the wishes of customers who require requests for goods or services.

This can be supported by research by Titin & Chamidatul (2015), showing that the machine maintenance variable has a positive and significant effect on the production process. Meanwhile, research Ramadhanty (2021) shows that there is an influence and a significant and positive effect between the independent variable of raw material inventory on the dependent variable of the production process.

3. RESEARCH METHODS

The research methodology employed in this study is quantitative research (Sugiyono, 2016). The independent variables considered are X1 Machine Maintenance and X2 Raw Material Inventory. The dependent variable focused on is the smooth production process. The authors conducted a field survey using the questionnaire method. Primary data served as the main data source, while secondary data supported the study. The research took place at PT Indometal Sedjati.

The study population consisted of all employees at PT Indometal Sedjati, including factory workers and staff, with a total of 100 respondents. A saturated sample technique from Non-Probability Sampling was utilized. The sample included all employees at PT Indometal Sedjati, totaling 100 individuals, comprising both factory workers and staff. Simple random sampling, such as lottery, ordinal, or random number table, was employed. Researchers used saturated sample techniques with simple random sampling. After determining the sample size, 100 respondents were selected from all employees at PT Indometal Sedjati.

There are several techniques for collecting data, including interviews, questionnaires, and observations. In this study, the data analysis was conducted using the Statistical Package for Social Science (SPSS) computer program, specifically the Windows Release 22.0 version. The method used in this study is associative hypothesis testing, which aims to determine the relationship between two or more variables. Variable X (independent variable) represents Machine Maintenance (X1) and Raw Material Supplies (X2), while variable Y (dependent variable) represents the Smooth Production Process. The data analysis method includes validity and reliability tests, as well as the Classical Assumption Test.

4. RESULTS AND DISCUSSION

4.1. Research Results

a. Respondent Characteristics

Table 1. Respondent Characteristics

Characteristics	Respondents	Total	Percentage
Gender	Male	54	54%
	Female	46	46%
Total		**100**	**100%**
Age	19-25 Years old	17	17%
	25-35 Year old	21	21%
	35-45 Year old	40	40%
	>45 Year old	22	22%
Total		**100**	**100%**
Education	Junior High School	9	9%
	Senior High School	22	22%
	Diploma	28	28%
	Bachelor	36	36%
	Master	3	3%
	Doctor	2	2%
Total		**100**	**100%**
Length of Service	1-5 Years	45 people	45%
	6-10 Years	35 people	35%
	11-15 Years	15 people	15%
	>16 Years	5 people	5%
Total		**100**	**100%**

The majority of respondents in this study were more men, totaling 54 people or 54% of respondents, while female respondents totaled 46 people or 46% of respondents. Respondents were grouped into 4 groups, namely the first group aged 19-25 years by 17% or as many as 17 respondents. The second group was 25-35 years old by 21% or as many as 21 respondents. The third group was 35-45 years old by 40% or as many as 40 respondents and the fourth group was> 45 years old by 22% or as many as 22 respondents.

In this study, the findings reveal that the largest group of participants, comprising 36% or 36 individuals, hold a bachelor's degree. Following closely behind, 28% or 28 respondents possess a diploma. Interestingly, 22% or 22 people have completed high school or its equivalent. Furthermore, 9% or 9 individuals have received education up to junior high school level. Lastly, a small percentage of the participants, specifically 3% or 3 individuals, have attained a master's degree, while only 2% or 2 individuals hold a doctorate.

The majority of respondents in this study who worked 1-5 years totaled 45 people or 45%, then respondents who worked 6-10 years totaled 35 people or 35%, then respondents who worked 11-15 totaled 15 people or 15% and the remaining respondents who worked> 16 years totaled 5 people or 5%.

b. Validity Test

The amount of data (n) = 100 obtained the results df = 100-2 = 98, then obtained a r_{table} of 0.1966. The validity test results can be seen in the table below:

Table 2. Validity Test Results

	Instrument	r_{value}	r_{table}	Description
Machine Maintenance (X1)	1	0,629	0,196	Valid
	2	0,515	0,196	Valid
	3	0,641	0,196	Valid
	4	0,619	0,196	Valid
	5	0,649	0,196	Valid
	6	0,616	0,196	Valid
Raw Material Inventory (X2)	1	0,699	0,196	Valid
	2	0,764	0,196	Valid
	3	0,696	0,196	Valid
	4	0,615	0,196	Valid
	5	0,737	0,196	Valid
	6	0,61	0,196	Valid
	7	0,63	0,196	Valid
Smooth Production Process (Y)	1	0,666	0,196	Valid
	2	0,655	0,196	Valid
	3	0,698	0,196	Valid
	4	0,659	0,196	Valid
	5	0,725	0,196	Valid
	6	0,569	0,196	Valid
	7	0,672	0,196	Valid

R_{value} with r_{table} of 0.196, the result obtained is that all Machine Maintenance statements are valid because r_{value} is greater than r_{table} 0.196. R_{value} with r_{table} of 0.196, the

result obtained is that all Raw Material Inventory statements are valid because r_{value} is greater than r_{table} 0.196. r_{value} with $_{rtable}$ of 0.196, the result obtained is that all statements of the smooth production process are valid because r_{value} is greater than r_{table} 0.196.

c. Reliability Test

Table 3. Instrument Reliability Test Results

Variable	Cronbach's Alpha	Limitations	Description
X_1	0,663	0,600	Reliable
X_2	0,806	0,600	Reliable
Y	0,788	0,600	Reliable

Table 3 shows that Cronbach's Alpha is 0.663, 0.806, and 0.788 respectively. This shows that all Cronbach's Alpha values are greater than 0.600, which means that all statements related to Machine Maintenance, Raw Material Supplies and Smooth Production Processes are declared good and reliable.

d. Classical Assumption Test Results

In this study, multicollinearity testing was carried out by looking at the Variance Inflation Factor (VIF) value and tolerance value in the regression model.

a) Normality Test

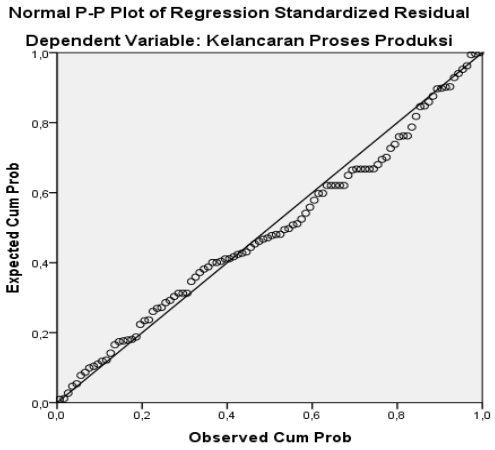


Figure 1. P-Plot Graph Normality Test Results
Source: SPSS 22 Data Processing Results

Based on Figure 1, it shows that the normality test of the P-Plot graph, the data distribution is quite following the diagonal line. This shows that the regression model is normally distributed.

b) Multicollinearity Test

As an illustration, is a regression model with independent variables Compensation, Competence with the dependent variable is Employee Performance:

Table 4. Multicollinearity Test Results

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Machine Maintenance	,412	2,430
	Raw Material Inventory	,412	2,430
a. Dependent Variable: Smooth Production Process			

Based on table 4, it can be seen that in this study there is no multicollinearity or no relationship between the independent variable and the dependent variable. This can be seen in the tolerance value of the machine maintenance variable of 0.412 and the tolerance value of the Raw Material Inventory variable of 0.412.

Of the two independent variables, it can be seen that they have a Variance Inflation Factor (VIF) value that is below 10, namely 2,430 on machine maintenance, and 2,430 on Raw Material Supplies. This means that all independent variables do not have a strong relationship which can be concluded that the independent variables used in the regression model of this study are free from multicollinearity problems.

c) Heteroscedasticity Test

In this study, the heteroscedasticity test was carried out using the Scatter Plot graph, through the Scatter Plot graph, in detecting whether there is a certain pattern between SRESID and ZPRED in the graph. The following heteroscedasticity test results are as follows:

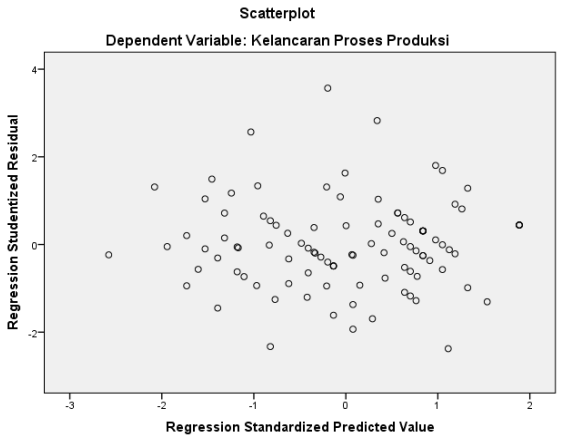


Figure 2. Heteroscedasticity Test Results

Based on Figure 2, it shows that the results of the heteroscedasticity test using the scatter plot, the points in the graph spread randomly, and do not form a certain pattern clearly and are spread both above and below the number 0 on the Y axis. This shows that the variables contained in the study do not experience heteroscedasticity problems.

e. Multiple Linear Regression Analysis

This multiple linear regression analysis is carried out to determine the effect of independent variables, namely machine maintenance (X1) and raw material inventory (X2) as a whole on the dependent variable, namely the smooth production process (Y).

Table 5. Multiple Linear Regression Results

Coefficients[a]				
Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	4.667	1.817	
	Machine Maintenance	.561	.111	.444
	Raw Material Inventory	.364	.073	.440
a. Dependent Variable: Smooth Production Process				

Based on table 5, the regression equation is obtained as follows:

Smoothness of the Production Process = 4,667 + 0,561 Machine Maintenance + 0,364 Raw Material Inventory

Based on the results of regression analysis of Machine Maintenance (X1), Raw Material Inventory (X2), and smooth production based on calculations can be explained as follows:

1. a = Constant of 4.667 states that if the increase in the Machine Maintenance variable (X1) and 0.364 (X2) (X1 = 0, X2 = 0) or is considered a constant, the smooth production process (Y) is 4.667.
2. b1 = Machine Maintenance (X1) regression coefficient of 0.561 means that if the other independent variables are constant in value and machine maintenance has increased by 1, then the Smooth Production Process (Y) will increase by 0.561. The coefficient is positive, meaning that Machine Maintenance (X1) affects the Smoothness of the Production Process (Y), the higher the Machine Maintenance (X1), the more the Smoothness of the Production Process (Y) increases.
3. b2 = Raw Material Inventory Coefficient (X2) of 0.364 means that if the other independent variables are permanent and the Raw Material Inventory increases by 1, then the Smoothness of the Production Process (Y) will increase by 0.364. The coefficient is positive, meaning that Raw Material Inventory (X2) has an effect on the Smoothness of the Production Process (Y), the higher the value of Raw Material Inventory (X2), the more the Smoothness of the Product Process (Y) will increase.

f. Analysis of the Coefficient of Determination (R^2)

Table 6. Results of the Coefficient of Determination

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.831[a]	.691	.685	1.78955
a. Predictors: (Constant), Raw Material Inventory, Machine Maintenance				
b. Dependent Variable: Smooth Production Process				

Based on table 6, it can be seen that the coefficient of determination is 0.691 or 69.1%. This identifies that the ability of the independent variable variation can explain

61.9% of the dependent variable, namely the Smoothness of the Production Process, while the remaining 38.1% is influenced by other variables not included in this study.

g. Hypothesis Testing Results

a) Partial Testing (t test)

Table 7. Partial Test Results (T Test)

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.667	1.817		2.568	.012
	Machine Maintenance	.561	.111	.444	5.049	.000
	Raw Material Inventory	.364	.073	.440	5.006	.000
a. Dependent Variable: Smooth Production Process						

Source: SPSS 22 data processing results

1) Effect of Machine Maintenance (X1) on the Smoothness of the Production Process (Y). Based on the results of the t test, it is known that the t value is 5.049 where the t value is smaller than the t table (df = 98, α = 0.05) of 1.660 or 5.049> 1.660, besides that it is known that the sig value is 0.000 where the sig value is smaller than 0.05 or 0.000 <0.05, so Ho Ho is rejected and Ha is accepted, meaning that Machine Maintenance has a significant effect on the Smooth Production Process.
2) The Effect of Raw Material Inventory (X2) on the Smoothness of the Production Process (Y). Based on the t test above, it is known that the calculated t value is 5.006 where the calculated t value is greater than the t table (d = 98 α = 0.05) of 1.660 or 5.006> 1.660, besides that it is known that the sig value is smaller than 0.000 where the sig value is smaller than 0.05 or 0.000 <0.05, then Ho is rejected and Ha is accepted, meaning that Raw Material Supplies have a significant effect on the Smooth Production Process.

b) Simultaneous Testing (F)

The significant level used is 5% (0.05) with the type of freedom df1 = (k-1), df2 = (n-k-1), where n = number of observations and k = number of variables.

Table 8. Simultaneous Test Results

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	695.068	2	347.534	108.520	.000b
	Residual	310.642	97	3.202		
	Total	1005.710	99			
a. Dependent Variable: Smooth Production Process						
b. Predictors: (Constant), Raw Material Inventory, Machine Maintenance						

Based on the F test, it is known that the F value is 108.520 where the F value is greater than the F table (df1 = 2, df2 = 99, a = 0.05) of 3.09 or 108.520> 3.09 besides that it is known that the sig value is 0.000 where the sig value is smaller than 0.05 or 0.000 <0.05, then Ho is rejected and Ha is accepted, meaning that Machine Maintenance and Raw Material Supplies simultaneously have a significant effect on the Smooth Production Process.

4.2. Discussion

a. The Effect of Machine Maintenance on the Smoothness of the Production Process

Based on the results of regression analysis where b1 = 0.561 is the regression coefficient of the Machine Maintenance variable is positive or unidirectional relationship, meaning that if Machine Maintenance increases by one unit, the Smoothness of the Production Process will also increase by 0.561. Then the results of the t test in table 4.12 of the Machine Maintenance variable show that the t value is 5.049 where the t value is greater than the t table (df = 98 α = 0.05) of 1.660 or 5.049> 1.660, besides that it is known that the sig value is 0.000 where the sig value is smaller than 0.05 or 0.000 <0.05, so Ho is rejected and Ha is accepted, meaning that Machine Maintenance has a significant effect on the Smooth Production Process.

b. The Effect of Raw Material Inventory on the Smoothness of the Production Process

Based on the results of the regression analysis where b2 = 0.364 is the regression coefficient of the Raw Material Inventory variable is positive or a unidirectional relationship, meaning that if the Raw Material Inventory increases by one unit, the Smooth Production Process will also increase by 0.364. Then the results of the t test in table 4.12 show that the t value is 5.006 where the t value is greater than the t table (df = 98, α = 0.05) of 1.660 or 5.006> 1.660 besides that it is known that the sig value is smaller than 0.000 where the sig value is smaller than 0.05 or 0.000 <0.05, so Ho is rejected and Ha is accepted, meaning that Raw Material Inventory has a significant effect on the Smooth Production Process.

c. Effect of Machine Maintenance and Raw Material Inventory simultaneously on the Smoothness of the Production Process

Based on the results of the coefficient of determination analysis, where the R square value is 0.691 or 69.1%. This identifies that the magnitude of the contribution of the independent variables (Machine Maintenance and Raw Material Supplies) to the dependent variable, namely the Smooth Production Process of 0.691 or 69.1% and the remaining 0.381 or 38.1% is contributed by other variables not included in this study. Then in the F test results above, namely in table 4.13, it is known that the calculated F value is 108.520 where the calculated F value is greater than the F table (df1 = 2, df = 99, α = 0.05) of 3.09 or 108.520> 3.09, besides that it is known that the sig value is 0.000 where the sig value is smaller than 0.05 or 0.000 <0.05, then Ho is rejected and Ha is accepted, meaning that Machine Maintenance and Raw Material Supplies simultaneously have a positive and significant effect on the Smooth Production Process.

5. CONCLUSION

Based on the results of the research and discussion described in chapter IV. Then the results of this study can be obtained conclusions, namely machine Maintenance has a positive and significant effect on the Smooth Production Process at PT Indometal Sedjati so that companies can pay more attention to Machine Maintenance so that production process activities can run well and smoothly. Machine Maintenance has a positive and significant effect on the Smooth Production Process at PT Indometal Sedjati so that companies can pay more attention to Machine Maintenance so that production process activities can run well and smoothly. Raw Material Inventory has a positive and significant effect on the Smooth Production Process at PT Indometal Sedjati so that companies can pay more attention to Raw Material Inventory and control of raw materials so that production process activities run smoothly and are not hampered. And with the proof that Machine Maintenance and Raw Material Supplies simultaneously have a positive and significant effect on the Smooth Production Process, the company is required to continue to maintain and improve the production process so that it can be even better.

The theoretical implications of the results of this study emphasize the need for companies to pay attention to machine maintenance, raw material inventory management, and smooth production processes as key factors that affect product quality. Previous research has supported the importance of proper management of job roles in machine maintenance, raw material inventory control, and monitoring of indicators to achieve optimal smooth production. The practical implication of this research at PT Indometal Sedjati is as a guide in evaluating and improving the efficiency of the production process with a focus on machine maintenance and raw material inventory management.

PT Indometal Sedjati is advised to increase attention to machine maintenance by conducting regular maintenance to reduce damage and disruption in the production process and maintain the safety of workers. In addition, the company is also advised to optimize raw material inventory management so that purchases are not excessive which can result in accumulation and hinder production. For future researchers, it is recommended to explore other independent variables to expand the scope of research and use different research methods with an adequate time period to ensure higher accuracy of research results, so that further research can provide new information and references related to the variables studied.

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