

Effect of Raw Material Inventory, Workers Quantity, and The Capacity of Machine on The Volume of The Production (Case on Nickel Pig Iron PT. Cahaya Modern Metal Industry)

Jupril Hijriah^{1*}, Moh. Mukhsin², Diqbal Satyanegara³.
{5551180084@untirta.ac.id^{1*}, moh.mukhsin@untirta.ac.id² diqbal.s@untirta.ac.id³}

Department of Management, Faculty of Economy and Business, Sultan Ageng Tirtayasa University¹²³

Abstract. The objective of this study is to investigate the effect of raw material inventory, labor amount, and machine capacity on production volume. Quantitative method and causal associative approach are employed. The population consists of the quantity of raw materials, the number of workers, the machine's capability, and production volume in year 2021, whereas samples are determined with purposive sampling. Using SPSS 25 for Windows, multiple regression analysis was performed on the data. (1) The amount of raw material inventory has a positive and significant effect on production volume, according to the findings of this study. (2) The number of workers has a favorable and considerable influence on output volume. (3) The machine's capacity has a positive and considerable effect on the volume of output. (4) The inventory of raw materials, the number of workers, and the machine's capability have a favorable and considerable effect on the output volume.

Keywords: Raw Material Inventory, Labor, Machine Capacity, Production Volume.

1. Introduction

Developments in the business world will always happen, this cannot be separated from various innovations that appear in the industrial sector, these developments can occur because of human growth that continues to increase, this of course leads to increasingly diverse human needs, because economic growth is not only measured from one field. but can be measured from several fields. This is what causes the increasingly fierce competition in the business world.

According to Fitrianto and Sudaryanto (2016) the company will make every effort to increase productivity, efficiency, fast and easy service, and continue to innovate to stay ahead and survive in the market. To achieve good results, companies are required to make the right strategic planning. In increasing production volumes to meet market demand, which currently continues to soar, in the production process the amount of raw material inventory becomes one of the main factors in fulfilling all production factors, the amount of inventory in each company is certainly different from the production volume of a company.

Raw materials are a basic need for companies to process goods and must be available when needed. According to Priyana (2014) the higher the availability of raw materials, the more that can be produced so that the resulting output increases. To avoid obstacles in the production process related to raw materials, of course, good management is needed in the management of raw materials so that production can run without obstacles, but in this case the company does not mean that it has to provide unlimited quantities of raw materials but must consider efficiency in the production process. warehouse capacity, because if the supply of raw materials is excessive it will cause losses for the company, therefore it is necessary to have the availability of raw materials that are guaranteed quality and sufficient for each planned production process. Inventories of raw materials prepared by PT. Cahaya Modern Metal Industri often experience instability due to laterite nickel ore raw materials originating from Sulawesi which takes a long time to ship due to sea transportation, and this is also a challenge for the company in managing Inventory of raw materials in the company.

Processing raw materials into ready-to-use materials cannot be isolated from human intervention as workers who carry out one of the most significant activities in the production process.

In addition to raw materials that affect the smooth production process, machine capacity is also one of the main supporting factors of the production process, because machines are supporting factors of production where raw materials will be processed through machines. If the amount of raw materials and machine capacity is good, it will support the achievement of production results that have been set by the company. The machine used by PT. Cahaya Modern Metal Industri uses a machine with a Blast Furnance system where the main raw materials are laterite nickel ore Limonite and Saprolite from within the country, limestone, coking coal, Wet nickel ore is dried in a rotary dryer, after drying it is mixed with coke The fine powder and limestone are fed into a sintering machine which is heated using exhaust gases from the Blast Furnace. The lump ore that comes out of the sintering machine is called sinter and is put into the Blast Furnace along with the coke. In it, sinter undergoes drying, heating and reduction as well as melting to produce NPI and slag or slag. The engine capacity targeted by PT. Cahaya Modern Metal Industry is 50,000 kg/hour but in reality the engine capacity produced by the company is still far from the target set by the company..

Based on the data that the researchers have collected, the following is data on the fulfillment of the production target for the type of Nickel Pig Iron during 2021, PT. Cahaya Modern Metal Industri:

Table 1. Production Volume Data for Nickel Pig Iron in 2021

Month	Target (kg)	Production Volume (kg)	Percentage
January	1,600,000.00	1,545,709.00	96,6%
February	1,900,000.00	1,847,706.00	97,2%
March	2,000,000.00	2,142,487.00	98,3%
April	1,800,000.00	1,740,605.00	98,6%
May	3,300,000.00	3,273,654.00	98,7%
June	3,100,000.00	3,057,303.00	38,8%
July	3,050,000.00	3,031,799.00	99,2%
August	3,280,000.00	3,261,410.00	99,4%
September	4,350,000.00	4,323,312.00	99,7%
October	2,080,090,00	2,040,090.00	99,5%
November	2,900,000,00	2,847,498.00	99,4%
December	3,570,000,00	3,539,964.00	99,6%

Source: Secondary data that has been processed by researchers from PT. Modern Metal Industrial Light

Based on the description of the context, the research questions for this study are as follows::

1. The amount of raw material inventory has a positive effect on production volume
2. The number of workers has a positive effect on the volume of production
3. machinery has a positive effect on production
4. The amount of raw material inventory, number of workers and machine capacity have a positive effect on production volume

2. Literature Review

Production Volume or can be referred to as the result of production is a series of products produced through the production process carried out by the company where the goods and services that have been produced will then be packaged and marketed through consumers. According to Stapelton (2011) production volume is a production achievement that can be expressed in quantitative terms in terms of volume and physical. Production volume can also be referred to as the output of the entire process in product activities in the form of goods and services which will then be used by consumers.

According to Indriyo in Astutik (2014) Production volume is the interaction between basic materials, auxiliary materials, labor and machines and equipment used. Production volume is the total amount of output produced from a production process. The amount of goods or services produced through the process of inputting resources into the desired output. Based on the opinions of the experts above, it can be concluded that the production volume in this study is the company's ability to process all kinds of aspects of production in producing goods or services that are ready to be marketed and used by consumers.

In the production process of a company, the supply of raw materials is one of the most important factors to support the smooth production process in producing the product expected by the company. According to Masiyal Kholmi (2013) Raw materials are materials that make up a large part of the finished product, raw materials processed in manufacturing companies can be obtained from local purchases, imports or the results of their own processing.

Inventory in the company has several types, the types of inventory are divided into 4 types of grouping according to Jay Heizer and Barry Render (2015), namely: Raw materials inventory, work in process inventory, MRO inventory (maintenance, repairing, operating), finished goods inventory.

In the production process in producing a product, various aspects work with each other in accordance with existing procedures, in processing the raw materials that exist in a production process, of course the raw materials that have been prepared will not become a product by itself but with a process run by humans, namely labor. itself is in direct contact with the raw materials to be processed into a product produced by the company itself. According to Law no. 13 of 2003 Chapter I Article 1 paragraph 2, the workforce consists of all individuals who are able to work to create goods and/or services for themselves and the community.. According to nature (2014) Labor is a population aged between 17 years to 60 years who work to earn their own money. And according to Hamzah (2014) Labor is a resident who works inside or outside a working relationship with the main production tools in the production process both physically and mentally. So workers are residents who have met the criteria in carrying out work in accordance with applicable regulations in an area. The number of workers is the number of workers or employees who work on average per day, both paid workers and unpaid workers. Production workers are workers who work directly in the production process that is carried out within a certain period, including workers who directly supervise the production process, machine maintenance and other production activities in the continuity of the production process.

According to Heizer and Render (2015) Capacity is a breakthrough or a number of units in which a facility can store, receive or produce within a certain period of time. So the capacity is to store, receive and produce within a certain time. According to Assuari (2016), the role of the machine is that the machine is very helpful for humans in carrying out the production of an item so that the goods are produced in a shorter time, in greater quantity and of better quality. The required capacity is the production target of the factory which has been set since the beginning of the plan for the establishment of the factory. Processing time consists of preparation time and processing time. Preparation time is the time required to prepare the machine according to the specifications of the workpiece to be processed.

Based on the descriptions mentioned by the experts, it can be concluded that machine capacity is the machine's ability to process raw materials in the process of production factors into products that will be marketed by the company..

3. Research Method

This research kind is quantitative According to Sugiyono (2016), causal associative research examines the relationship between two or more variables. using a causal association strategy. The purpose of the research is to determine the effect (causation) relationship between the independent variable and the dependent variable. This study examines the impact

of the amount of raw material inventory, the number of workers, and the machine capacity on PT. Cahaya Modern Metal Industrial's Nickel Pig Iron production volume.

3.1 Population and Sample

The population of this study is data obtained from the company PT. Cahaya Modern Metal Industri which covers all production data of PT. Light Modern Metal Industry in the production period of 2021.

The sample in this study consists of raw material inventory data received from PT. Cahaya Modern Metal Industry. The samples in this study include information on the number of workers, machine capacity, and production volume of PT. Cahaya Modern Metal Industry throughout 2021. This study employs a non-probability sampling technique employing purposive sampling, i.e., the selection of samples based on the subjective considerations of the researcher that are deemed appropriate and in accordance with the information desired by the researcher Ferdinand (2014). The purpose of this technique is to obtain the actual data. In this study, a strategy of purposive sampling was employed with the following criteria: During the 2021 production period, data on the amount of raw material inventories, number of workers, machine capacity, and production volume were recorded. The information was compiled using data from PT. Cahaya Modern Metal Industry's production period in 2021.

Table 2. Variable Operation

No	Variable	Definition	Indicator	Scale
1	Production Volume	Production Volume is the interaction between basic materials, auxiliary materials, labor and machines and equipment used by Indriyo in Astutik (2014:38)	Number of products produced	Ratio
2	Raw Material Inventory	Raw materials are materials that make up a large part of the finished product, raw materials processed in manufacturing companies can be obtained from local purchases, imports or the results of their own processing "Masiyal Kholmi (2013: 29)	Estimated raw material requirements	Ratio
3	Worker Quantity (X2)	The number of workers is workers who work inside or outside the working relationship with the main production tools in the production process, both physically and mentally. Hamza (2014)	Number of workers in the production department	Ratio

4	Machine Capacity	A facility's capacity is the maximum number of units it can store, receive, or generate during a certain time frame. Thus, capacity is the ability to store, receive, and produce within a given timeframe. Heizer and Render (2015-348)	Machine performance Ratio in processing raw materials
---	------------------	--	---

4.3 Data analysis method

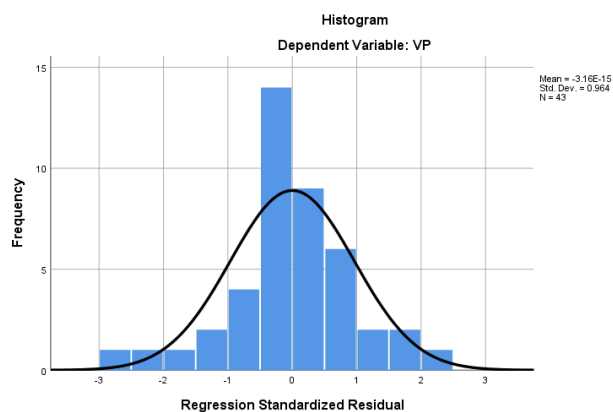
After the selection and data gathering phases of research, this study's data analysis technique consists of a testing procedure. Multiple linear tests are used in this study's analytical method. Prior to verifying the hypothesis in this study, however, it is necessary to examine several traditional assumptions. In multiple linear analysis, it is necessary to satisfy the classical assumption test. Normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test are the classical assumption tests. In addition, after testing the classical assumptions, move on to testing the hypotheses, i.e. Multiple Linear Regression This study's Multiple Regression Analysis Model is $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$. Each test in this study used IBM SPSS version 25 software.

5. Research Results and Discussion

5.1 Classic Assumption Test

5.1.1 Normality test

The purpose of the normality test is to determine whether or not the data have a normally distributed regression equation. Using a histogram, the normality test may measure the distribution of the data.



Grafic 1. Normality Test Image With Histogram Graphic

Source: SPSS data processing results

The results of the normality test as seen from the picture above shows that the data is normally distributed, this can be concluded from the curve pattern that does not deviate to the

left or right, and the data appears to spread out following the diagonal line or histogram graph. (Ghozali. *Multivariate Analysis Application With IBM SPSS Program. Semarang: Diponegoro University Publishing Agency.* 2018, page, 161-167)

5.1.2 Multikolinearity Test

This test is designed to examine whether the researcher's regression model found a correlation between independent variables (independent) Good regression models should have no correlation between independent variables.

Table 3. Multicollinearity Test Table

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
1 Raw Material Inventory	0.856	1.156
2 Worker Quantity	0.972	1.029
3 Machine Capacity	0.883	1.133

Source: SPSS data processing results

According to the following table, there is no multicollinearity in the regression equation model, as the tolerance value of each variable is larger than 0.10 and the VIF value of each variable is greater than 10. The tolerance value of the variable amount of raw material inventory is 0.856 greater than 0.10, and the VIF value of the variable amount of raw material inventory is 1.156, indicating that the VIF value is less than 10, the tolerance value of the variable Amount of labor is 0.972 greater than 0.10, and the VIF value of the variable Amount of labor is 1.029, indicating that the VIF value is less than 10, and the tolerance value of the variable engine capacity is 0.883 greater than 0.10 (Ghozali. *Multivariate Analysis Application With IBM SPSS Program. Semarang: Diponegoro University Publishing Agency.* 2018, page, 107)

5.1.3 Heteroscedasticity Test

This test seeks to detect whether the determined regression model exhibits heteroscedasticity; if it does, this suggests that the analysis result is inaccurate. This research employs the Glejser test by regressing each independent variable with its absolute residual value.

Table 4. Heteroscedasticity Test Table

Variabel	Sig	P Value
1 Raw Material Inventory	0.05	0.657
2 Worker Quantity	0.05	0.499
3 Machine Capacity	0.05	0.648

Source: SPSS data processing results

Based on the above table, it can be concluded that there is no heteroscedasticity in the regression equation model, as each variable's P value is greater than 0.05. For example, the P value of the variable amount of raw material inventory is 0.657 greater than 0.05, and the P value of Machine Capacity is 0.648 greater than 0.05. (Ghozali. *Multivariate Analysis*

5.1.4 Autocorelation Test

The purpose of the autocorrelation test is to determine whether, in a linear regression model, there is a link between the confounding correlation in period t and the errors in period t-1 (prior period).

Table 5. Autocorrelation Test Table

Model	R	R Square	Adjusted R Square	Std.Error of the Estimate	Durbin Watson
1	0.803	0.645	0.618	0.127590217	1.494

Source: SPSS data processing results

According to the preceding table, the Durbin-Watson number is 1,494. In the Durbin-Watson table, the upper limit value (du) is 1.7220 and the lower limit value (du) is 1.3166, given that the sample size (n) is 43 and the total number of dependent and independent variables (k) is 4 at a significance level of 5%. On the basis of the foregoing autocorrelation test with a DW value of 1.494, it can be stated that the value $(4 - dW) > dU$ $(4 - 1.494) > 1.7200$ is 2.051, indicating there is no autocorrelation in the model. (Ghozali. *Multivariate Analysis Application With IBM SPSS Program. Semarang: Diponegoro University Publishing Agency. 2018, hlm, 111)*

5.2 2 Hypothesis Test

The purpose of the analysis was to identify the influence of the variables Amount of Raw Material Inventory (X1), Worker Quantity (X2), and Machine Capacity (X3) on the dependent variable, Production Volume (Y). Assessing the strength of the relationship between the dependent and independent variables.

Table 6. Multiple Linear Regression Table

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-12.991	4.248		-3.058	.004
Raw Material Inventory	.232	.075	.319	3.109	.004
Worker Quantity	3.504	1.641	.207	2.135	.039
Machine Capacity	1.874	.308	.617	6.081	.000

a. Dependent Variable: VP

Source: SPSS data processing results

Based on the table above, it can be concluded that the equation of multiple linear regression analysis is as follows::

$$Y = -12.991 + 0.232 X_1 + 3.504 X_2 + 1.874 X_3 + e$$

Y = Production Volume

X1 = Raw Material Inventory
 X2 = Worker Quantity
 X3 = Machine Capacity

From the preceding regression equation, the following may be deduced:

- a). The constant of -12,991 indicates that if the value of the raw material inventory (X1), the amount of labor (X2), and the machine capacity (X3) remain constant or equal to zero, then the Production Volume will be equal to -12,991 units. (Y') is -12,991
- b). The regression coefficient for the variable amount of raw material inventory (X1) is 0.232, indicating that the production volume will increase by 0.232% if the amount of raw material inventory increases by 1%. A positive coefficient indicates that raw material inventory and production volume are positively related.
- c). The regression coefficient for the variable number of workers (X2) is 3,504, which indicates that a 1% increase in the number of workers will result in a 3,504% increase in production volume. A positive coefficient indicates that machine capacity and production volume are positively correlated.
- d). The regression coefficient for the variable engine capacity (X3) is 1.874, which indicates that a 1% increase in engine capacity would result in a 1.874% increase in production volume. A positive coefficient indicates that machine capacity and production volume are positively correlated. (Ghozali. *Multivariate Analysis Application With IBM SPSS Program*. Semarang: Diponegoro University Publishing Agency 2018, hlm, 78)

5.2.1 Partial Statistics Test

Table 7. Partial Test Result Table

Coefficients^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-12.991	4.248		-3.058	.004
Raw Material Inventory	.232	.075	.319	3.109	.004
Worker Quantity	3.504	1.641	.207	2.135	.039
Machine Capacity	1.874	.308	.617	6.081	.000

a. Dependent Variable: VP

Source: SPSS data processing results

Based on the aforementioned table, the t table value for the criterion at level $\alpha = 5\%$ is ($df = n - k - 1 = 43 - 4 - 1 = 38$). ($\alpha/2 = 0.05 / 2 = 0.025$) is 2.0210. Where df is the degree of freedom, n is the number of observations, and k is the number of independent variables. The following can be deduced:

1. Hypothesis 1: Influence of inventory of raw materials on output

The t-test is used to examine whether the quantity of raw material inventory has a substantial impact on production volume. The results are as follows.:

(tcount) = 3.109

(ttable) = 2.0210

On the basis of the findings of the partial test of the influence of the amount of raw material inventory on the production volume, it can be stated that the amount of raw material inventory has a significant effect on the production volume, in accordance with the null hypothesis. **H1 received.**

2. Hypothesis 2: The Effect of the Number of Labor on Production Volume

The t test is used to assess if the number of workers has a substantial impact on production volume, and the results are summarized as follows :

(tcount) = 2.135
 (ttabel) = 2.0210

According to the findings of the partial test of the effect of the number of workers on the production volume, the quantity of raw material inventory > ttable (2.135 > 2.0210) and a significant amount of 0.039 < 0.05, thus the number of workers has a substantial effect on the production volume. **H2 is accepted.**

3. Hipotesis : The Effect of Machine Capacity on Production Volume

The t-test is used to examine whether engine capacity has a substantial influence on production volume, and the results are as follows :

(tcount) = 6.081
 (ttabel) = 2.0210

According to the findings of the partial test of the effect of engine capacity on production volume, the amount of raw material inventory > ttable (6,081 > 2,0210) and 0.000 < 0.05, indicating that engine capacity has a considerable impact on production volume. **H3 is accepted.** (Ghozali. *Multivariate Analysis Application With IBM SPSS Program*. Semarang: Diponegoro University Publishing Agency. 2018, hlm, 79)

5.2.2 Simultaneous Statistic Test (f Test)

Table 8. Table of Simultaneous Testing Test Results

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.155	3	.385	23.650	.000 ^b
	Residual	.635	39	.016		
	Total	1.790	42			

a. Dependent Variable: Y

b. Predictors: (Constant), X1,X2,X3

Source: SPSS data processing results

The above table reveals that the calculated f value is 23,650, however the f table with f test criteria is conducted at a level of $\alpha = 5\%$ with a f table value of 2.82, leading to the following conclusion :

Based on the results of simultaneous testing of the amount of raw material inventory, the number of workers and the capacity of the machine to the production volume obtained $F_{count} > F_{table}$ (23.650 > 2.82), it can be concluded that in this study H4 is accepted. So it can be concluded that the amount of raw material inventory, the number of workers and the capacity of the machine together have a significant effect on the volume of production. according to the hypothesis **H4 is accepted.**(Ghozali. *Multivariate Analysis Application With IBM SPSS Program*. Semarang: Diponegoro University Publishing Agency. 2018)

5.2.3 Coefficient of Determination Test (R2)

The coefficient of determination (R2) The purpose of the test was to evaluate the model's capacity to explain the variation of the dependent variable.

Table 9. Test Results Table R²

Model	R	R Square	Adjusted R Square	Std.Error of the Estimate	Durbin Watson
-------	---	----------	-------------------	---------------------------	---------------

1	0.803	0.645	0.618	0.127590217	1.494
---	-------	-------	-------	-------------	-------

Source: SPSS data processing results

According to the table, the coefficient of determination of 0.645 indicates that 64.5% of variations in the amount of raw material inventory, number of workers, and machine capacity can explain variations in production volume, while the remaining 35.5% can be attributed to other variables that were not examined. In other words, there are still production volume inputs, such as capital, chemicals, information, and technology, which can explain production volume variances. (Ghozali. *Multivariate Analysis Application With IBM SPSS Program*. Semarang: Diponegoro University Publishing Agency. 2018, hlm, 286)

6. Conclusions and recommendations

6.1 Conclusions

Based on the results and discussion in the preceding chapter regarding the effect of research on the effect of raw material inventory, worker count, and machine capacity on production volume, the following paragraphs examine the effect of research on the effect of raw material inventory, worker count, and machine capacity on production volume. The case study on Nickel Pig Iron PT. Cahaya Modern Metal Industry can be summarized as follows:

- 1.The amount of raw material inventory partially has a significant effect on production volume, because the amount of raw material inventory affects production volume, where if the amount of raw material inventory is sufficient in the company's inventory system, the resulting production volume will also increase, but if the amount of raw material inventory is not sufficient good then the production volume will decrease.
- 2.The number of workers partially has a significant effect on the volume of production, because the number of workers affects the volume of production, where if the number of workers who will work on raw materials using machines and other production support tools is sufficient, the amount of production produced will also increase, but if the number of workers is not sufficient then the production volume will decrease.
- 3.Machine capacity partially has a significant effect on production volume, because machine capacity affects production volume, where if the machine capacity is qualified and able to balance the amount of inventory that will be processed by the machine in the company, the number of products produced will also increase, but if the machine capacity is not able to offset the amount of existing raw materials, the production volume will decrease.
- 4.The results of the f test show simultaneously or together that the amount of raw material inventory, number of workers and machine capacity simultaneously have a significant effect on production volume.

6.2 Suggestion

Taking into account the results and limitations in this study, the researchers suggest the following:

1. For Companies

PT. Cahaya Modern Metal industry is expected to pay more attention to the raw material control system because the main raw material is nickel laterite ore which is indeed obtained from the Sulawesi islands which takes time in the delivery process, therefore the company must pay attention to the amount of raw material used during the lead time and determine safety stock so that there is no shortage of raw materials, in addition to increasing the amount of raw material inventory, the company is also expected to maximize the number of existing workers so that they are able to balance in processing the amount of raw material inventory in the company in order to continue to increase the company's production volume, and that is no less important regarding the capacity of the machine where the machine is one of the main factors in determining the volume of the company, where the company should increase the capacity of existing machines in order to be able to maximize the amount of raw material inventory and the number of workers who will process the existing raw materials into finished products where if this is done it will increase the company's production volume.

2. For Further Researchers

Data collection is carried out for more than one year. Production data also increases the number of variables that are directly related to the research topic. For example, capital, technology used, market share conditions) this is done in order to expand research to better represent the type of product.

Reference

- [1] Alam, S.. Pengaruh Komunikasi, Motivasi, Dan Disiplin Kerja Terhadap Kinerja Pegawai Lembaga Penjaminan Mutu Pendidikan. In *E-Jurnal Katalogis* (Vol. 2, Issue 1). (2014)
- [2] Andriani, D. N. Pengaruh modal, tenaga kerja, dan bahan baku terhadap hasil produksi (studi kasus pabrik sepatu PT. Kharisma Baru Indonesia). In *EQUILIBRIUM : Jurnal Ilmiah Ekonomi dan Pembelajarannya* (Vol. 5, Issue 2). <https://doi.org/10.25273/equilibrium.v5i2.1543> (2017).
- [3] Area, U. M. *Pengaruh Jumlah Persediaan Bahan Baku Dan Kapasitas Mesin Terhadap Volume Produksi Pada Pabrik Kelapa Sawit (Pks) Rambutan Pt . Perkebunan Nusantara Iii (Persero) Skripsi Oleh : Arini Yuris Agustina Program Studi Akuntansi Fakultas Ekonomi Dan Bisnis U.* 56–60. (2019).
- [4] Ferdinand, A. *Metode penelitian manajemen : pedoman penelitian untuk penulisan skripsi tesis dan disertasi ilmu manajemen* (1st ed.). Universitas Diponegoro Press. (2014).
- [5] Fitrianto, A. Y., Sudaryanto, B., & Manajemen, J. The Effect of Supply Chain Management on Outlet Operational Performance. *Diponegoro Journal of Management*, 5(2), 1–11. (2016).
- [6] Ghozali. *Aplikasi Analisis Multivariate Dengan Program IBM SPSS 25* (9th ed.). Badan Penerbit Universitas Diponegoro. (2018).
- [7] Hamzah B. Uno. *Teori motivasi dan pengukurannya* (Junwinanto (ed.); 1st ed.). Bumi Aksara. (2013).
- [8] Hartson Stapelton. *Manajemen Pemasaran dan Bisnis Edisi 5* (5th ed.). Ghalia. (2011)
- [9] Herawati, E. F. I. *Analisis pengaruh faktor produksi modal , bahan baku , tenaga kerja dan mesin terhadap produksi glycerine pada pt . Flora sawita chemindo medan Untuk Memperoleh Gelar Magister Sains dalam Program Studi Ilmu Manajemen pada Program Pascasarjana Universitas S.* 1–65. (2008).
- [10] Hermawan, D. J. Pengaruh Jumlah Persediaan Bahan Baku Dan Kapasitas Mesin Terhadap Volume Produksi Pada Ud. Cahaya Restu Kota Probolinggo. *Capital: Jurnal Ekonomi Dan Manajemen*, 1(2), 93. <https://doi.org/10.25273/capital.v1i2.2317> (2018).
- [11] Ita Zuli , Astutik and Budi, P. *Pengaruh Jumlah Persediaan Bahan Baku Kapasitas mesin dan Jumlah Tenaga Kerja Terhadap Volume Produksi Pada CV. Sanyu Paint Sidoarjo.* <https://doi.org/2087-2402> (2013).
- [12] Janah, N. Pengaruh Modal, Tenaga Kerja, dan Teknologi Terhadap Hasil Produksi Monel (Studi Kasus Industri Monel Di Kabupaten Jepara). *Skripsi*, 1–90. <https://lib.unnes.ac.id/30700/>. (2017).
- [13] Jay Heizer, B. R. *Manajemen Operasi: Manajemen Keberlangsungan dan Rantai Pasokan* (11th ed.). Salemba Empat. (2015).
- [14] Kholmi, M., & Yuningsih. *Akuntansi Biaya* (4th ed.). UGM Press. (2013).
- [15] Maulida, I. S., & Tholibin, K. *Pengaruh Kualitas Alat Produksi Terhadap Volume Produksi Industri Tenun Sarung Di Lamongan* (Vol. 5, Issue 1). (2021).
- [16] Prianata, R., & Natha, K. S. Pengaruh Jumlah Tenaga Kerja, Bahan Baku, dan Teknologi Terhadap Produksi Industri Furniture Di Kota Denpasar. *E-Jurnal EP UNUD. Universitas Udayana*, 3(1), 11–18. <https://ojs.unud.ac.id/index.php/eep/issue/view/1045>. (2014).
- [17] Prof. Dr. Sofjan Assauri, M. *Manajemen operasi produksi : pencapaian sasaran organisasi berkesinambungan* (M. E. N. Rachmi Fitri Assauri, S.T., Dr. Sofyani Faradila Assauri, M.M., Nurul Yulianti Assauri, M.Psi. (ed.); 3rd ed., Vol. 3, Issue 2). Raja Grafindo Persada. (2016).
- [18] Prof. Dr. Sugiyono. *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Alfabeta Bandung. (2016).
- [19] Santi Virnayanti, P., & Darsana, I. B. Pengaruh Tenaga Kerja, Modal Dan Bahan Baku Terhadap Produksi Pengrajin Patung Kayu. *E-Jurnal EP Unud*, 7(11), 2338–2367. (2018).