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Analysis of the Effect of Temperature, Lighting and Noise on Employee Work Productivity in the Noodle Production Section at CV. Kartika Makassar

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ABSTRACT

A comfortable work environment is needed by humans to be able to carry out activities optimally and productively. Therefore the work environment must be handled and designed properly. A good temperature in the workplace will support the activities carried out by workers by meeting predetermined standards.. The objectives to be achieved in this study are to find out how much influence temperature / temperature, noise and lighting in the work environment have on employee work productivity in the noodle production section at CV. Kartika Makasar. This research will be conducted at CV. Kartika Makassar, which is located at Jalan Setia 1 Blok AB No. 4 Ex. Buntusu Kec. Tamalanrea Makassar City, South Sulawesi Province. In the analytical method where data processing uses the Classical Assumption Test in the form of a Linear Regression Test which is used to determine the direction and how much influence the independent variables have on the dependent variable. Based on the results of the analysis and discussion, it shows that in the physical work environment, namely temperature (X1) with a value of 0.560 > 0.05 and lighting (X2) 0.516 > 0.05 indicates that the hypothesis is rejected. Thus the temperature and lighting at CV Kartika Makassar are good because together they do not affect the work productivity of employees or operators. As for Noise (X3) 0.034 <0.05, indicating that the hypothesis is accepted thus it has a significant effect on the work productivity of employees or operators.

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INTRODUCTION

It is very important to observe the work environment in a particular industry. The performance of the people who carry out the production process is directly affected by the work environment, even though the work area does not actually carry out the production process in a company. The setting in which workers carry out their daily tasks is known as a workplace. A good temperature in the workplace will support the activities carried out by workers by meeting predetermined standards. The recommended temperature at work is 24°C - 26°C (dry temperature) at 85% - 95% humidity [4].

Lighting is a very important element in carrying out tasks and activities because it allows workers to see clearly the object being worked on. The impact of inadequate lighting in the workplace can be reduced by using good lighting. Reduced or increased lighting can interfere with vision and cause worker fatigue [1]. In the workplace, noise is a frequent physical threat. Large companies consistently experience occupational health problems in the form of noise at work (Muhamad Rian, 2013). Every factor that affects how well a person performs at work, including temperature, air humidity, air flow, lighting, noise, mechanical vibration, aroma, and color, is considered part of the work environment [6].

According to [1] states that the importance of the meaning of productivity in improving national welfare has been universally recognized. There is no type of human activity that does not benefit from increased productivity as "the power to produce more goods and services". According to [3], the term "physical work environment" refers to every physical element around the workplace that can impact workers directly or indirectly. There are two divisions that can be made in an actual physical workspace. The first type is a setting that is close and directly related to employees (such as tables, chairs and so on). The second category is the general environment, usually called the workplace environment, which includes elements such as temperature, humidity, air circulation, lighting, noise, mechanical vibration, smells, colors, and so on.

According to [3] the physical work environment is all physical conditions that exist around the workplace that can affect employees both directly and indirectly. The physical work environment can be divided into two categories, namely (a) The environment that is directly related to employees (eg chairs, tables, work centers and so on). (b)Intermediary environment or general environment (such as: factories, houses, offices, schools, cities, road systems and others). [5]. According to [3] "Non-physical work environment" refers to all situations involving work relationships, including relationships with superiors, co-workers, and subordinates.According to [7] the company has a unique internal environment. After that, the company's internal atmosphere will highlight its strengths and weaknesses.Due to the fact that each manager can consider a different set of external circumstances, external environmental factors can be subjective. The factors studied are external variables that influence how the company develops. The macro and micro environment are the two main parts of the company's external environment [2].

RESEARCH METHODS

This research will be conducted at CV. Kartika Makassar, which is located at Jalan Setia 1 Blok AB No. 4 Ex. Buntusu Kec. Tamalanrea Makassar City, South Sulawesi Province. This research will be carried out for approximately one month.

Data collection

a. Primary Data

Primary data is carried out directly on the CV. Kartika Makassar to produce accurate data. The data collected are production data as well as temperature, lighting and noise levels in the noodle production section.

b. Secondary Data

Secondary data was obtained from literature reviews and reports on the subject at work of CV. Makassar Kartika Study.

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Data processing

In the analytical method where data processing uses the Classical Assumption Test in the form of a Linear Regression Test which is used to determine the direction and how much influence the independent variables have on the dependent variable.

1. Multiple Linear Regression Test

The influence of independent variables and dependent variables was assessed using regression analysis. Regression is called simple linear regression if there is only one independent variable and one dependent variable (Juliandi, Irfan, & Manurung, 2014).

RESULTS AND DISCUSSION

Measurement

Table 1. Temperature measurement

No	Lokasi	Tanggal Pengamatan	Waktu Pengamatan	Suhu (ºC)
1	Lokasi Produksi	2/7/2022	13.00–15.00	32.1
2	Lokasi Produksi	5/7/2022	13.15-15.15	32.3
3	Lokasi Produksi	8/7/2022	13.30-15.30	32.1
4	Lokasi Produksi	12/7/2022	13.45-15.45	32.1
5	Lokasi Produksi	15/7/2022	14.00-16.00	32.2
6	Lokasi Produksi	18/7/2022	14.15-16.15	32,3
7	Lokasi Produksi	21/7/2022	14.30-16.30	32.1
8	Lokasi Produksi	25/7/2022	14.45-16.45	31.9
9	Lokasi Produksi	28/7/2022	13.00-15.00	32.1
10	Lokasi Produksi	30/7/2022	13.15-15.15	32.2

Table 2. Lighting (lux)

No	Lokasi	Tanggal Pengamatan	Waktu Pengamatan	Pencahayaan (Lux)
1	Lokasi Produksi	2/7/2022	13.00–15.00	25.7
2	Lokasi Produksi	5/7/2022	13.15-15.15	25.8
3	Lokasi Produksi	8/7/2022	13.30-15.30	25.9
4	Lokasi Produksi	12/7/2022	13.45-15.45	26.0
5	Lokasi Produksi	15/7/2022	14.00-16.00	26.0
6	Lokasi Produksi	18/7/2022	14.15-16.15	26.0
7	Lokasi Produksi	21/7/2022	14.30-16.30	25.8
8	Lokasi Produksi	25/7/2022	14.45-16.45	26.4
9	Lokasi Produksi	28/7/2022	13.00-15.00	26.0
10	Lokasi Produksi	30/7/2022	13.15-15.15	26.0

Table 3. Noise (dB)

No	Lokasi	Tanggal Pengamatan	Waktu Pengamatan	Kebisingan (dB)
1	Lokasi Produksi	2/7/2022	13.00–15.00	70.5
2	Lokasi Produksi	5/7/2022	13.15-15.15	69.8
3	Lokasi Produksi	8/7/2022	13.30-15.30	69.6
4	Lokasi Produksi	12/7/2022	13.45-15.45	70.0
5	Lokasi Produksi	15/7/2022	14.00-16.00	73.7
6	Lokasi Produksi	18/7/2022	14.15-16.15	69.9
7	Lokasi Produksi	21/7/2022	14.30-16.30	69.9
8	Lokasi Produksi	25/7/2022	14.45-16.45	71.5
9	Lokasi Produksi	28/7/2022	13.00-15.00	70.6
10	Lokasi Produksi	30/7/2022	13.15-15.15	70.6

Table 4. Productivity

No	Tanggal Pengamatan	Hasil Produksi Mie (Kg)	Nilai Produktivitas(%)
1	2/7/2022	190	82,6 %
2	5/7/2022	191	83,0 %
3	8/7/2022	202	87,8 %
4	12/7/2022	188	81,7 %
5	15/7/2022	185	80,4 %
6	18/7/2022	199	86,5 %
7	21/7/2022	188	81,7 %
8	25/7/2022	185	80,4 %
9	28/7/2022	221	96,0 %
10	30/7/2022	190	82,6 %

Results of Data Processing

Table 5. Multiple Linear Regression Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	147.544	253.155		.583	.581
	Suhu	.005	.021	.102	.254	.808
	Pencahayaan	.696	10.668	.028	.065	.950
	Kebisingan	-1.157	1.689	-.296	.685	.028

a. Dependent Variable: Produktivitas

a) Hypothesis X1 (Ha)

Temperature (X1) has no significant effect on productivity (Y), this can be concluded from the results of the regression analysis, namely t-count X1 = 0.254 and the significance value of X1 is 0.808 > 0.05 (5% significance level), it can be concluded that temperature (X1) partially has no significant effect on productivity (Y) in other words Ha received.

b) Hypothesis X2 (Ha)

Lighting (X2), has no significant effect on productivity (Y), this can be concluded from the results of the regression analysis, namely t-count X2 = 0.065 and the significance value of X2 is 0.950 > 0.05 (significant level 5%), it can be concluded that Lighting (X2) has no significant effect on productivity (Y) in other words Ha received.

c) Hypothesis X3 (Ho)

Noise (X3) has a significant effect on productivity (Y), this can be concluded from the results of the regression analysis, namely t-count X3 = 0.685 and a significance value of X3 is 0.028 <0.05 (5% significance level), it can be concluded that noise (X3) partially has a significant effect on productivity (Y) in other words, Ho is accepted.

Table 6. ANOVA

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	21.543	3	7.181	.234	.033[b]
	Residual	183.838	6	30.640		
	Total	205.381	9			

a. Dependent Variable: Produktivitas

b. Predictors: (Constant), Kebisingan, Suhu, Pencahayaan

Table 7. R Square

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.324[a]	.105	.343	5.53530

a. Predictors: (Constant), Kebisingan, Suhu, Pencahayaan

Based on the output above, the value of Adjusted R square (coefficient of determination) is 0.343, which means that the effect of the independent variable (X) on the dependent variable (Y) is 34.3%.

CONCLUSION

1. Temperature (X1) with a value of 0.808 > 0.05 is stated to have no significant effect on employee work productivity in the noodle production section at CV. Kartika Makasar.
2. Lighting (X2) with a value of 0.950 > 0.05 is stated to have no significant effect on employee work productivity in the noodle production section at CV. Kartika Makasar.
3. Noise (X3) with a value of 0.028 <0.05 is stated to have a significant effect on employee work productivity in the noodle production section at CV. Kartika Makasar.
4. Temperature (X1), lighting (X2) and noise (X3) simultaneously have a significant effect on employee work productivity in the noodle production section at CV. Kartika Makasar.

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