Escalate: Economics and Business Journal

https://journal.takaza.id/index.php/escalate

Vol. 04, No. 03, 2026, pp. 602-609
E-ISSN: 3025-4213

E-mail:escalate@takaza.id

The Influence of the Work Environment on Employee Productivity at Krebet Baru Sugar Factory

Meyta Imelda Afri Dwi Arinda[1], Rini Aprilia Lestari[2], Yulanda Elis Meyana[3]
Sekolah Tinggi Teknik Multimedia Internasional Malang
Corresponding Author e-mail: meytaimelda25@gmail.com, riniaprilia08@gmail.com. .yulandaem@gmail.com

Article History:
Received : 06-08-2026
Revised : 02-09-2026
Accepted : 03-09-2026

Keywords: work environment; employee productivity; human resource management; sugar industry; employee performance.

Abstract : *Employee productivity is an important factor in supporting organizational performance, and the work environment is one of the factors that may be associated with productivity. This study aims to analyze the relationship between the work environment and employee productivity at Krebet Baru Sugar Factory. This study employed an explanatory quantitative research design using a survey approach. The population consisted of approximately 2,000 employees, with 50 respondents selected using the Yamane formula and a simple random sampling technique. Data were collected using a Likert-scale questionnaire and analyzed using validity and reliability tests, classical assumption tests, simple linear regression, t-test, and coefficient of determination (R^2) using SPSS. The results showed a positive and statistically significant relationship between the work environment and employee productivity, with a regression coefficient of 0.272 and a significance value of 0.001 (<0.05). The coefficient of determination (R^2) of 0.204 indicates that the work environment explains 20.4% of the variation in employee productivity, while 79.6% is associated with other factors outside the research model. Practically, these findings provide a basis for Krebet Baru Sugar Factory management to improve physical and non-physical work environment conditions as part of efforts to support employee productivity. Further research is recommended to examine other factors that may explain employee productivity.*

How to Cite: Meyta Imelda Afri Dwi Arinda, Rini Aprilia Lestari, Yulanda Elis Meyana. (2026). *The Influence of the Work Environment on Employee Productivity at Krebet Baru Sugar Factory*. 4(3). pp.602-609 https://doi.org/10.61536/escalate.v4i3.643

https://doi.org/10.61536/escalate.v4i3.643

Introduction

Increasingly fierce competition in the industrial world demands effective human resource management to support organizational competitiveness. Human resources are a crucial asset that determines an organization's success in achieving its goals, while the work environment is an important factor that may be associated with employee productivity. According to Meyana et al. (2025), improving human resource capacity through effective knowledge management can enhance a company's competency, operational effectiveness, and competitiveness. Furthermore, Meyana and Ndari (2023) state that human resources are a valuable asset because they are a key factor in achieving organizational goals and maintaining a company's competitive advantage. The work environment includes physical

aspects, such as lighting, temperature, cleanliness, ventilation, work facilities, and occupational safety, as well as non-physical aspects, including relationships between employees, communication, and the work atmosphere.

According to Widyaningrum (2019), the work environment includes everything around employees that can affect comfort in carrying out their work. Meanwhile, Nurdin et al. (2023) explain that a good work environment can provide a sense of security and comfort so that employees can work more effectively and efficiently. Prihantoro (2015) also states that the work environment is one of the factors that influence employee effectiveness and productivity through physical and non-physical conditions that support work performance. Work productivity reflects the ability of employees to produce output effectively and efficiently through the utilization of available resources. Mauliana Sapitri and Septiadi Wirawan (2025) state that productivity is the ratio between output and input used during the work process, while Nurfitriani (2023) explains that productivity reflects the efficient use of resources as well as individual efforts to improve skills, discipline, cooperation, and work quality.

Previous studies have shown a positive relationship between the work environment and productivity. Valiantsya Galeris' (2024) study showed that the work environment influences employee performance, with work motivation as a mediating variable, while Aulia Wardani's (2024) study found that the work environment positively influences employee productivity at Jatiroto Sugar Factory. Furthermore, Mauliana Sapitri and Septiadi Wirawan's (2025) study demonstrated that the work environment has a positive and significant impact on employee productivity. However, previous studies have generally examined the relationship using additional variables or different organizational contexts, leaving limited evidence regarding the direct relationship between the work environment and employee productivity in the specific context of a sugar-processing factory. Krebet Baru Sugar Factory is practically important as a sugar-processing industry whose operational activities involve production processes, work facilities, occupational safety, physical working conditions, and interactions among employees across different work units. These characteristics make the work environment in this setting distinct from general office or service organizations and provide a relevant context for examining employee productivity.

Theoretically, the relationship can be explained through the perspective that a supportive physical and non-physical work environment can provide employees with comfort, security, and favorable working conditions, which may be associated with their ability to perform tasks effectively and efficiently. Therefore, this study extends previous research by specifically examining the relationship between the work environment and employee productivity at Krebet Baru Sugar Factory using an explanatory quantitative design and simple linear regression, without incorporating additional mediating variables. The study is expected to contribute empirical evidence regarding the role of the work environment in the sugar-processing industry and provide practical information for management in identifying areas of the physical and non-physical work environment that can be improved to support employee productivity.

Research methodology

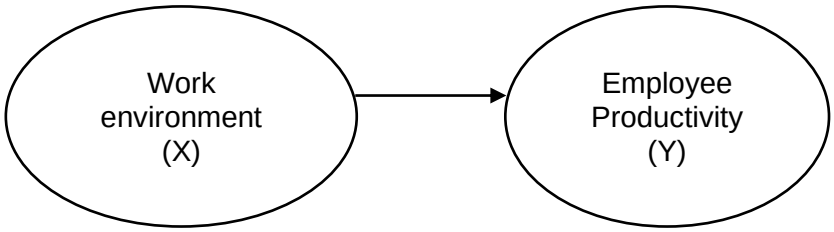
Types and Methods of Research

This study uses a quantitative approach with descriptive methods. The quantitative approach was used because the study aims to examine the influence of work environment variables on employee productivity through numerical data processing. The research data were obtained from distributing questionnaires to respondents who had been selected as the research sample. The descriptive method was used to provide a systematic overview of the work environment conditions and employee productivity levels at the Krebet Baru Sugar Factory. This method explains the characteristics of each variable studied based on empirical data obtained in the field. This approach was chosen because it is able to produce objective information and can be used to test the research hypotheses statistically.

Data analysis in this study was conducted using the Statistical Package for the Social Sciences (SPSS) software. Before hypothesis testing, the data were first tested through validity and reliability tests to ensure the research instrument was suitable for use. Next, classical assumption tests were

https://doi.org/10.61536/escalate.v4i3.643

conducted, including normality, linearity, and heteroscedasticity tests. Hypothesis testing was conducted using simple linear regression analysis to determine the extent of the work environment's influence on employee productivity. Furthermore, a partial test (t-test) was used to determine the significance of the influence of the independent variables on the dependent variable, and the coefficient of determination (R^2) to measure the extent of the work environment's contribution in explaining variations in employee productivity.



Location and Time of Research

This research was conducted at the Krebet Baru Sugar Factory located in Malang Regency, East Java Province. The selection of the research location was based on the consideration that Krebet Baru Sugar Factory is a company engaged in the sugar processing industry with a fairly large number of employees, thus aligning with the research objective, which is to analyze the influence of the work environment on employee productivity. The objects in this research are all Krebet Baru Sugar Factory employees who work in various sections or work units in the company. Through these research objects, it is hoped that an overview of the work environment conditions and the level of employee productivity can be obtained as a basis for analyzing the relationship between the two research variables.

The research was conducted in 2025 according to a predetermined schedule prepared by the author. The research stages included preparation, development of research instruments, distribution of questionnaires to respondents, data collection, data processing using Statistical Package for the Social Sciences (SPSS) software, analysis of research results, and preparation of the research report. All activities were carried out systematically to ensure that the data obtained accurately reflected the actual conditions and supported the achievement of the research objectives.

Population and Sample

The population in this study was all employees of Krebet Baru Sugar Factory, totaling approximately 2,000 people. The population is the entire research subject, each possessing specific characteristics consistent with the research objectives. All Krebet Baru Sugar Factory employees were selected as the population because they are directly related to the work environment and productivity variables studied. However, given the relatively large population and the limitations of time, effort, and funding, not all members of the population were included as respondents.

The sample size was determined using the Yamane formula proposed by Sugiyono (2019) with an error rate of 14%, resulting in a sample size of 50 respondents. The sampling technique used was Simple Random Sampling, which is a simple random sampling technique that provides an equal opportunity for each member of the population to be selected as a respondent. The use of this technique aims to minimize bias in sample selection so that the data obtained can objectively represent the characteristics of the population. Thus, the sample obtained is expected to provide an overview of the influence of the work environment on employee work productivity at PG Krebet Baru.

Results and Discussion

The characteristics in this study include aspects such as gender, age, and department or position. More details can be seen in Table 1.

Table 1.Respondent Characteristics

Information	Amount	Presentation
Gender		
Man	39	39%
Woman	11	11%

https://doi.org/10.61536/escalate.v4i3.643

Age		
20-30 Years	28	28%
31-40 Years	12	12%
41-50 Years	8	8%
51-60 Years	2	2%
Domicile		
HR	13	13%
Human Resources (K3)	1	1%
Clinical HR	1	1%
Human Resources and General	5	5%
Financial administration	1	1%
Vehicle	1	1%
Non-Permanent Employees	28	28%

Source: Data processed by researchers, 2025

Validity and Reliability Test

According to Sahir (2021:31), validity measures the extent to which research instruments accurately measure the intended variables, while reliability assesses the consistency of respondents' answers. Validity was tested using product-moment correlation, while reliability was measured using Cronbach's alpha, both processed with SPSS. The results showed that all indicators had an r-value greater than 0.279 and all variables had Cronbach's alpha values above 0.6, indicating that the instruments were valid and reliable.

Table 2.Validity and Reliability Test

Variables	**Indicator**	**R*hitung***	***Cronbach's Alpha***
Work Environment (X)	X1	0.555	0.879
	X2	0.572	
	X3	0.495	
	X4	0.606	
	X5	0.608	
	X6	0.622	
	X7	0.756	
	X8	0.762	
	X9	0.703	
	X10	0.836	
	X11	0.758	
Employee Work Productivity (Y)	Y1	0.856	0.882
	Y2	0.853	
	Y3	0.740	
	Y4	0.670	
	Y5	0.835	
	Y6	0.821	

Source: Data processed by researchers, 2025

Classical Assumption Test

Normality Test

A normality test indicates that the data is normally distributed if the probability value is > 0.05. Conversely, if the probability value is < 0.05, the data is considered non-normally distributed. A

https://doi.org/10.61536/escalate.v4i3.643

normality test is used to ensure that research data meets one of the basic assumptions in parametric statistical analysis.

Table 3. Normality Test

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			50
Normal Parametersa,b	Mean		0.0000000
	Standard Deviation		2.77115169
Most Extreme Differences	Absolute		0.091
	Positive		0.091
	Negative		-0.045
Test Statistics			0.091
Asymp. Sig. (2-tailed)c			.200d
Monte Carlo Sig. (2-tailed)e	Sig.		0.373
	99% Confidence Interval	Lower Bound	0.361
		Upper Bound	0.385
a. Test distribution is Normal.			
b. Calculated from data.			
c. Lilliefors Significance Correction.			
d. This is a lower bound of the true significance.			
e. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.			

Source: Data processed by researchers, 2026

Based on the results of the normality test in Table 3, a value of 0.200 and a Sig. value of 0.373 were obtained. The probability value is > 0.05. Based on the decision-making criteria, if the probability value is > 0.05, the data is considered normally distributed. However, if the probability value is less than 0.05, the data is not normally distributed. Because the significance level of this test result is > 0.05, it can be concluded that the research data has a normal distribution. Therefore, the normality assumption in the regression model has been met and the next analysis can be carried out.

Linearity Test

Decision making for linearity testing is done by comparing the F value *hitung*using the F value or by looking at the stated significance level. Data is said to meet the linearity assumption if the F value < F or the Sig value > 0.05. However, if the F value > F or the Sig value < 0.05, the relationship between the variables does not appear linear. Linearity test is needed to ensure that the relationship between independent variables and dependent variables can be analyzed using a linear regression model.

Table 4. Linearity Test

ANOVA Table							
			Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
TotalY * TotalX	Between Groups	(Combined)	242,456	18	13,470	1,815	0.070
		Linearity	96,195	1	96,195	12,964	0.001
		Deviation from Linearity	146,261	17	8,604	1,159	0.349
	Within Groups		230,024	31	7,420		
	Total		472,480	49			

Source: Data processed by researchers, 2026

Based on the results of the linearity test in the F value table*hitung* is 1.159. To find the F value, we first calculate the degrees of freedom (df), namely df1 = k = 1 and df2 = n − k − 1 = 50 − 1 − 1 = 48.

https://doi.org/10.61536/escalate.v4i3.643

According to the F distribution table created by Anastasia (2018), the F value is 4.04. This result shows that the F value (1.159) < F (4.04). In addition, the test results also show a significance value of 0.349, which means it is greater than the significance level of 0.05 (0.349 > 0.05). In conclusion, there is a linear relationship between the independent variables and the dependent variable. This result indicates that the regression model used in this study meets the linearity requirements, making it suitable for further analysis and hypothesis testing.

Heteroscedasticity Test

Heteroscedasticity is tested using Spearman's correlation. The step is to check for variance instability in the regression results using Spearman's correlation. If the significance or probability value is >0.05, the hypothesis is accepted, as there is no heteroscedasticity in the data. If the significance or probability value is <0.05, the hypothesis of heteroscedasticity is rejected.

Table 5. Heteroscedasticity Test

Coefficientsa						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2,233	2,057		1,085	0.283
	TotalX	-0.002	0.048	-0.006	-0.043	0.966
a. Dependent Variable: ABS_RES						

Source: Data processed by researchers, 2026

Based on the results of the heteroscedasticity test using the Spearman correlation method in Table 5, the significance value for the work environment variable is 0.966. This value is higher than the 0.05 significance level (0.966>0.05), so based on the decision-making criteria, it can be concluded that there are no signs of heteroscedasticity in the regression model used. This indicates that the residual variation at each level of the independent variable is consistent and does not show significant differences. Therefore, the regression model used in this study meets the classical assumptions, especially the assumption of heteroscedasticity, making it suitable for further analysis.

Hypothesis Testing

Simple Linear Regression Analysis

According to Sahir (2021:51), simple regression is an analysis consisting of only two variables: the independent variable and the dependent variable.

Table 6. Simple Linear Regression Analysis

Coefficientsa						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	13,048	3,299		3,956	0,000
	TotalX	0.272	0.078	0.451	3,503	0.001
a. Dependent Variable: totally						

Source: Data processed by researchers, 2026

Based on the results of the simple linear regression analysis presented in the table above, a regression equation is obtained that describes the relationship between the independent and dependent variables in this study. These results also provide an initial overview of the causal relationships between the variables contained in the research model. The results of the simple linear regression equation are as follows:

$$Y = 13.048 + 0.272X$$

https://doi.org/10.61536/escalate.v4i3.643

The value of 13.048 is a constant indicating that when the work environment is considered constant, employee work productivity is valued at 13.048. The regression coefficient of 0.272 means that every 1 unit increase in the work environment will increase productivity by 0.272 units. A significance value of 0.001 < 0.05 indicates that the work environment has a positive and significant effect on employee work productivity.

T-test

According to Sahir (2021), a partial test, or t-test, is a test of the regression coefficients individually to determine the partial significance of each independent variable on the dependent variable.

Table 7. T-test

Coefficientsa						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	13,048	3,299		3,956	0,000
	TotalX	0.272	0.078	0.451	3,503	0.001
a. Dependent Variable: totally						

Source: Data processed by researchers, 2026

Partial hypothesis testing is performed by comparing the calculated t-value and the table t-value to determine whether there is a significant effect of the independent variable on the dependent variable. The decision in this test is made by comparing the t-value with the t-value at a significance level of 0.05 (5%). If the t-value> t-value then the alternative hypothesis (H1) is accepted and the null hypothesis (H_0) is rejected. If the t-value < t-value, then the null hypothesis (H_0) is accepted and the alternative hypothesis (H1) is rejected. In this study, the t-value is determined using the following formula:$hitung\ tabel\ hitung\ tabel hitung\ tabel tabel$

df=n−k

Description:

n = number of samples (50)

k = number of independent variables (1)

So from the formula above we get:

t = 50−1$tabel$

= 49 = (2.009) in the t-distribution table at the 2.009 level (Al'Auni et al., 2025)

According to the results of the t-test, a t-value of$hitung$3,503and a significance value of 0.001. The t-value obtained is > from t ($hitungtabel$3,503> 2.009), and the significance value is <0.05 (0.001 <0.05). So, the result is H_0 is rejected, H_1 is accepted. So it can be concluded that work environment variables have an effect on work productivity.

Coefficient of Determination $(R)^2$

According to Sahir (2021:54), the coefficient of determination—often denoted by R^2—essentially measures the extent of the independent variables' influence on the dependent variable.

Table 8. Test of the Coefficient of Determination $(R)^2$

Model Summary				
Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.451a	0.204	0.187	2,800
a. Predictors: (Constant), TotalX				

Source: Data processed by researchers, 2026

From table 8 above, it was found that the R Square (R^2) value was 0.204. The coefficient of determination (R^2) is used to determine how much influence the independent variable has on the dependent variable. The R^2 value of 0.204 indicates that the work environment variable (X) is able to explain its influence on the employee work productivity variable (Y) by 20.4%. This is calculated using the formula KP = r^2 × 100%, which is 0.204 multiplied by 100% which results in 20.4%. Thus, it can be

https://doi.org/10.61536/escalate.v4i3.643

concluded that the influence of the work environment variable on the employee work productivity variable is included in the low to moderate category, because the benefits are still relatively small and have not reached 100%. Meanwhile, the other part of 79.6% is influenced by other factors outside this research model which were not analyzed in this study.

Conclusion

This study concludes that the work environment has a positive and significant effect on employee work productivity at PG Krebet Baru, as indicated by the regression coefficient of 0.272 and a significance value of 0.001 (<0.05), with the work environment explaining 20.4% of the variation in employee productivity. Theoretically, these findings reinforce the view that a conducive physical and non-physical work environment is an important factor in supporting employee productivity. Practically, Krebet Baru Sugar Factory should improve work facilities, maintain safe and comfortable working conditions, and strengthen harmonious work relationships to support sustainable productivity. This study is limited by the use of 50 respondents and the focus on only one independent variable in a single sugar factory, so the findings may not fully represent other work contexts. Future research is recommended to involve larger samples, different sugar-processing organizations, and other factors such as work motivation, job satisfaction, leadership, workload, and occupational safety and health to provide a more comprehensive explanation of employee productivity.

Bibliography

Al'Auni, K., Sabiru, T., & Panggabean, HS (2025). *Uji Signifikansi Distribusi T*. Jurnal Penelitian dan Pengabdian Masyarakat Indonesia

Anastasia. (2018). *Tabel Distribusi F*. Politeknik. http://eprints.polsri.ac.id

Mauliana Sapitri, & Septiadi Wirawan. (2025). *Pengaruh Lingkungan Kerja Terhadap Produktivitas Kerja Karyawan Pt Air Minum Tabalong Bersinar (Perseroda). Japb*, *8*(1), 619–633. https://doi.org/10.35722/japb.v8i1.1194

Meyana, Y. E., & Ndari, P. W. (2023). *Strategi Peningkatan Kinerja Sumber Daya Manusia (SDM) melalui Pengembangan Karir.* Sinteks: Jurnal Teknik, 12(1), 48-57.

Meyana, Y.E, Rini, PWN, & Lestari, R. A. (2025). Pengembangan Sistem Manajemen Pengetahuan dengan Metode K-TRIPLE untuk Peningkatan Kapasitas SDM di UMKM Berbasis Kearifan Lokal. *Jurnal Manajemen dan Penelitian Akuntansi*, *18* (2), 286-296.

Nurdin, MA, Erislan, E., & Ramli, S. (2023). *Analisis Pengaruh Kedisiplinan Kerja, Keselamatan dan Kesehatan Kerja (K3), Serta Lingkungan Kerja Terhadap Kinerja Karyawan PT. KABEL BBIC BERCA di Kabupaten Tangerang*. Jurnal Untuk Masyarakat Sehat (JUKMAS) , 7 (2), 120-130.

Nurfitriani, MM (2023). *Pengembangan SDM Dalam Meningkatkan Produktivitas Kerja Karyawan.* Penerbit IAIN Parepare Nusantara Press.

Prihantoro, A. (2015). *Peningkatan kinerja sumber daya manusia melalui motivasi, disiplin, lingkungan kerja, dan komitmen* . Publikasikan lebih dalam.

Sahir, Syafrida Hafni (2021). "Metodologi Penelitian". Penerbit KBM Indonesia Anggota IKAPI Banguntapan, Bantul-Jogjakarta (Kantor I) Balen, Bojonegoro-Jawa Timur, Indonesia (Kantor II)

Sugiyono (2019). "*Metode Penelitian Kuantitatif, Kualitatif, dan R&D*". Penerbit Alfabeta Bandung. Jl. Gegerkalong Hilir No. 84 Bandung.

Valiantsya Galeris. (2024). *Pengaruh Lingkungan Kerja dan Stres Kerja terhadap Kinerja Karyawan PT. PG. Rajawali I Unit PG. Krebet Baru.* Skripsi. Program Studi Manajemen. Universitas Islam Negeri (UIN) Maulana Malik Ibrahim. Malang

Wardani, A. (2024). *Pengaruh Motivasi Kerja Dan Lingkungan Kerja Terhadap Produktivitas Kerja Karyawan.* Jurnal Kewirausahaan dan Inovasi , 3 (4), 998-1011.

Widyaningrum, M. E. (2019). *Manajemen sumber daya manusia.*

https://doi.org/10.61536/escalate.v4i3.643