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THE EFFECT OF OVERTIME WORK AND WORK ENVIRONMENT ON EMPLOYEE PERFORMANCE THROUGH JOB SATISFACTION AT PT BIO FARMA (PERSERO)

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ABSTRACT

This study aims to determine the effect of overtime on employee performance, the effect of work environment on employee performance, the effect of overtime on employee performance mediated by job satisfaction, the effect of work environment on employee performance mediated by job satisfaction, and the effect of job satisfaction on employee performance. This research was conducted at PT Bio Farma (Persero) with a sample size of 237 people. The method used was quantitative with data collection techniques using questionnaires. Statistical testing used SEM PLS (Structural Equation Modeling Partial Least Square) to measure the relationship between variables. The results showed that the work environment and job satisfaction have a direct positive and significant effect on performance. Furthermore, overtime work and the work environment have a positive and significant indirect effect on performance through job satisfaction, while overtime work has a direct negative and nonsignificant effect on employee performance. This research can have good implications for companies and leaders in efforts to improve employee performance by implementing appropriate overtime work policies, maintaining a conducive work environment, and not neglecting job satisfaction as a positive booster for employees.

KEYWORDS *Overtime, Work Environment, Job Satisfaction, Employee Performance*

INTRODUCTION

A company is a system consisting of several subsystems that work together to achieve the expected goals (Hutagalung *et al*. 2021). In this modern era, companies are required to continue to grow and develop in order to survive and

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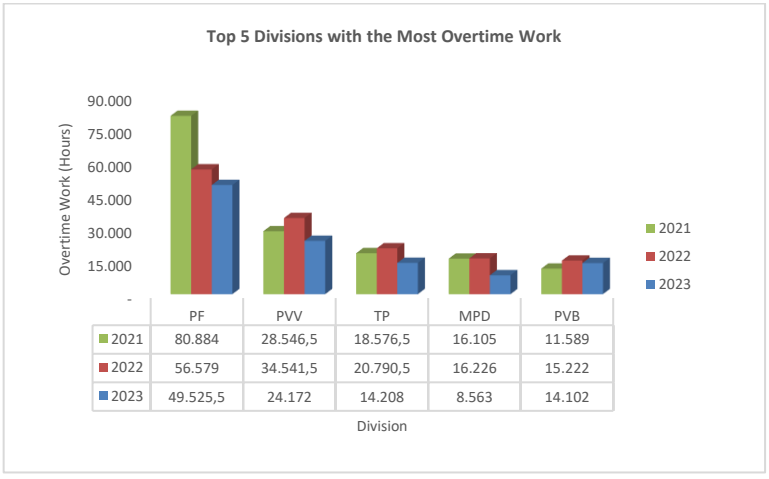
continue to compete competitively with other companies. The effectiveness of a company can be achieved properly so that it is able to compete with other companies.

The role of human resources is crucial in determining goals, so human resources are referred to as valuable assets owned by the company (Pradnyani & Rahyuda, 2022). Employees or employees are the most important element in determining the back and forth of a company. To achieve company goals, employees are needed who are in accordance with the requirements of the company, and must also be able to carry out the tasks determined by the company. Every company will always try to improve the performance of its employees, in the hope that the company's goals will be achieved.

According to Nugraheni (2019), increasingly fierce competition causes companies to be able to increase competitiveness in order to maintain the company's survival. With these demands, the production process in a corporate environment generally requires a fast implementation time. This fast implementation time aims to pursue production targets. To develop this, an *overtime* work system is carried out. Overtime work must be balanced with the readiness of supporting factors, including labor (employees), materials and work tools that are in accordance with the needs of the job.

Overtime work is one part of the project work plan intended to complete the production process that cannot be completed in a normal working day/normal shift. According to Thomas (2002), the definition of overtime work is additional work done outside of working hours that exceeds 40 working hours per week or work done to complete work that is impossible to complete in a normal working day. Working overtime is a common culture in the Asian workplace (Beckers et al., 2004 in Tan, Kim-Lin, & et al., 2020). This overtime work will use extra labor, both in quality and quantity. Of course, its implementation will greatly affect the condition of the employees themselves, both physically and psychologically.

Data obtained from the *Human Capital* Division at PT Bio Farma (Persero) shows that currently the frequency of overtime work is quite high during the last three years 2021, 2022 and 2023 (up to July). This is an interesting phenomenon to discuss.



	PF	PVV	TP	MPD	PVB
2021	80.884	28.546,5	18.576,5	16.105	11.589
2022	56.579	34.541,5	20.790,5	16.226	15.222
2023	49.525,5	24.172	14.208	8.563	14.102

Figure 1. Top 5 Divisions with the Most Overtime Worked

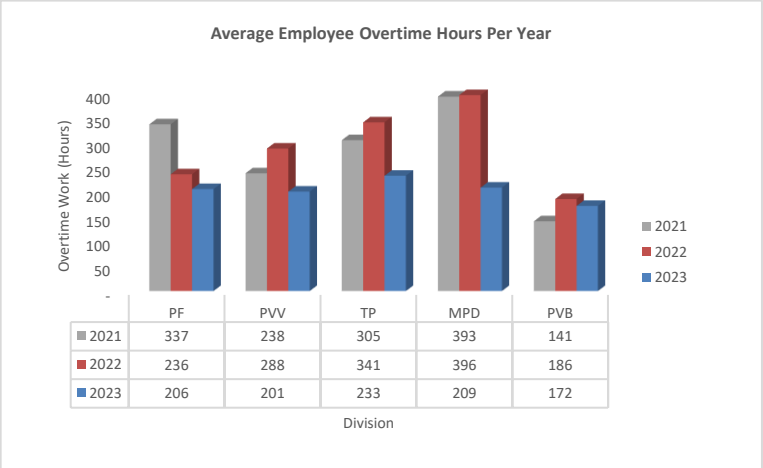


Figure 2. Average Employee Overtime Work Hours

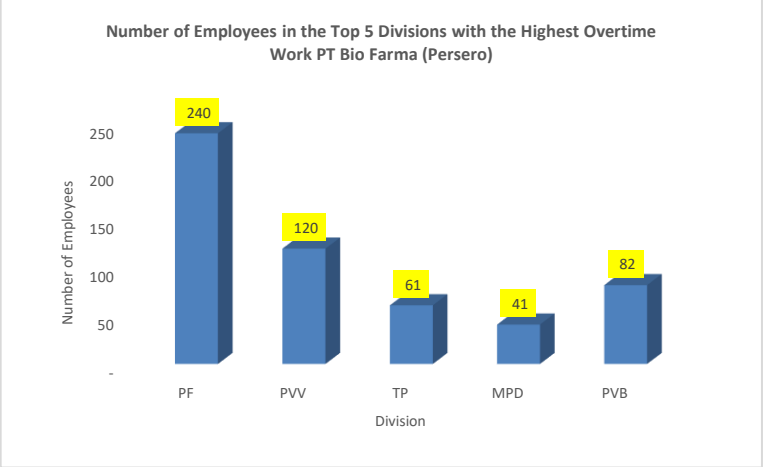


Figure 3. Number of Employees

Another important role that must be emphasized by a company in order to achieve its goals is to create a work environment both physical work environment and non-physical work environment. The work environment is one of the most important components in employees completing their work. According to Wibowo (2017), the work environment or work situation provides comfort so as to encourage employee performance. It also includes how the conditions of human relations within the organization, both between superiors and subordinates and among colleagues. According to Winata (2022) the work environment is the physical, social, and psychological life within the company that affects employee performance and productivity. Some experts suggest that the work environment is all the things that surround employees that affect them in working and carrying out tasks.

According to Mangkunegara (2014: 64) what is meant by performance is the quality and quantity of work achieved by an employee in carrying out his duties in accordance with the responsibilities given to him. Employees can improve their

performance to the maximum with the support of an appropriate work environment. On the other hand, at work we must pay attention to job satisfaction, which is one of the aspects considered by the company. Job satisfaction is an emotional attitude that is pleasant and loves his job. This attitude is reflected by work morale, discipline, and work performance. Job satisfaction is enjoyed in work, outside work, and a combination of inside and outside work (Hasibuan, 2007: 202).

In the end, it all boils down to employee performance in the company. Performance is very important for the sustainability of the company in order to continue to grow, especially the current condition of global competition which adds to the increasingly difficult competition. Performance is generally defined as a person's success in carrying out a job (Arianty, Bahagia, Lubis, & Siswadi, 2016). For this reason, the performance of employees can affect the overall performance of the agency.

Based on the above background, researchers are interested in examining the influence of overtime work and work environment variables. The research title taken is "The Effect of Overtime Work and Work Environment on Employee Performance Through Job Satisfaction at PT Bio Farma (Persero)".

RESEARCH METHOD

Research conducted with quantitative explanatory research method, to determine the position of variables and their influence between variables. This relationship was studied using quantitative research methodology by distributing questionnaires which were used as research instruments. According to (Sugiyono, 2022) quantitative research is a study by obtaining data in the form of numbers or qualitative data which is then scaled. The number of research samples was 237 respondents with the sampling technique used in this study was probability sampling, namely simple random sampling.

The hypotheses formulated in this study are as follows, H1: Overtime work has a direct positive and significant effect on employee performance, H2: Work environment has a direct positive and significant effect on employee performance. H3: Overtime work has a positive and significant effect on employee performance through job satisfaction, H4: Work environment has a positive and significant effect on employee performance through job satisfaction, H5: Job satisfaction has a direct positive and significant effect on employee performance.

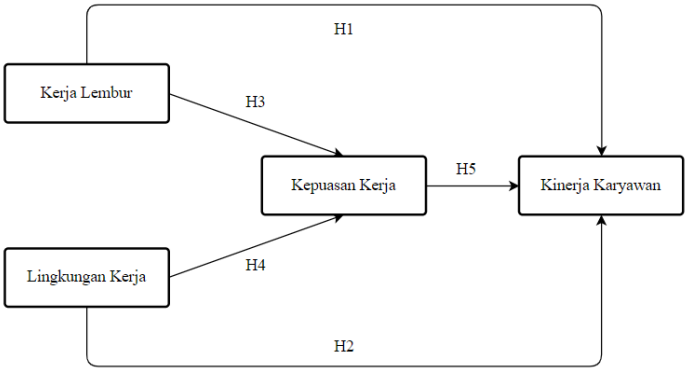


Figure 4. Schematic of the Research Framework

RESULT AND DISCUSSION

The characteristics of respondents based on gender, division/work unit, latest education, position, employee status and length of service are presented below:

Table 1. Respondent Characteristics

Characteristics	Number of Respondents	Percentage
Gender		
Male	209	88,19%
Female	28	11,81%
Division/Work Unit		
Pharmaceutical Production, Immunosera, Diagnostics and Therapeutics	128	54,01%
Bacterial Vaccine Production	36	15,19%
Virus Vaccine Production	33	13,92%
Production and Distribution Management	22	9,28%
Engineering and Maintenance	18	7,60%
Last Education		
High School / Equivalent	128	54,01%
D3	40	16,88%
D4	7	2,95%
S1	59	24,89%
S2	3	1,27%
Position		
Staff	13	5,49%
Junior Staff	54	22,78%
Executive	170	71,73%
Employee Status		
Contract Employee	30	12,66%
Permanent Employees	207	87,34%
Length of Service		
< 5 Years	38	16,03%
5-10 Years	45	18,99%
11-15 Years	66	27,85%
16-20 Years	43	18,14%
> 20 Years	45	18,99%

Pre-Survey Validity and Reliability Test

The validity test was carried out to test whether the instrument used in this study was valid or not, the correlation technique used to test the validity of the statement items in this study was *Pearson product moment.* The correlation value is *product moment* correlation / Pearson correlation is r count or validity coefficient. A correlation value above 0.30 is declared a valid measurement item.

Table 2. Overtime Work Variable Validity Test Results (X1)

Indicator	Correlation value / r_{count}	Standard/Critical Value	Description
KL1	0,743	0,300	Valid
KL2	0,786	0,300	Valid
KL3	0,694	0,300	Valid
KL4	0,438	0,300	Valid
KL5	0,569	0,300	Valid
KL6	0,506	0,300	Valid
KL7	0,555	0,300	Valid
KL8	0,594	0,300	Valid
KL9	0,446	0,300	Valid
KL10	0,681	0,300	Valid
KL11	0,314	0,300	Valid

Table 3. Results of the Work Environment Variable Validity Test (X2)

Indicator	Correlation value / r_{count}	Standard/Critical Value	Description
LK1	0,385	0,300	Valid
LK2	0,817	0,300	Valid
LK3	0,624	0,300	Valid
LK4	0,759	0,300	Valid
LK5	0,334	0,300	Valid
LK6	0,409	0,300	Valid
LK7	0,317	0,300	Valid
LK8	0,519	0,300	Valid
LK9	0,563	0,300	Valid
LK10	0,654	0,300	Valid
LK11	0,478	0,300	Valid

Table 4. Job Satisfaction Variable Validity Test Results (Z)

Indicator	Correlation value / rcount	Standard/Critical Value	Description

Z1	0,685	0,300	Valid
Z2	0,675	0,300	Valid
Z3	0,834	0,300	Valid
Z4	0,611	0,300	Valid
Z5	0,501	0,300	Valid
Z6	0,667	0,300	Valid
Z7	0,615	0,300	Valid
Z8	0,409	0,300	Valid
Z9	0,653	0,300	Valid
Z10	0,326	0,300	Valid
Z11	0,624	0,300	Valid
Z12	0,582	0,300	Valid
Z13	0,507	0,300	Valid
Z14	0,515	0,300	Valid
Z15	0,517	0,300	Valid
Z16	0,333	0,300	Valid

Table 5. Results of the Validity Test of the Performance Variable (Y)

Indicator	**Correlation value / $_{rcount}$**	**Standard/Critical Value**	**Description**
KIN1	0,705	0,300	Valid
KIN2	0,771	0,300	Valid
KIN3	0,872	0,300	Valid
KIN4	0,794	0,300	Valid
KIN5	0,869	0,300	Valid
KIN6	0,807	0,300	Valid
KIN7	0,364	0,300	Valid
KIN8	0,448	0,300	Valid
KIN9	0,787	0,300	Valid
KIN10	0,742	0,300	Valid
KIN11	0,705	0,300	Valid
KIN12	0,771	0,300	Valid
KIN13	0,872	0,300	Valid
KIN14	0,794	0,300	Valid
KIN15	0,869	0,300	Valid
KIN16	0,807	0,300	Valid
KIN17	0,364	0,300	Valid
KIN18	0,448	0,300	Valid
KIN19	0,787	0,300	Valid
KIN20	0,742	0,300	Valid

Furthermore, the reliability test was carried out using *Cronbach's alpha* value. Where the instrument is declared reliable if it has a *Cronbach's alpha* value> 0.7 critical value.

Table 6. Reliability Test Results of Research Instruments

Variables	Number of Indicators	Cronbach's Alpha	Critical Value	Description
Overtime Work (X1)	11	0,793	0,7	Reliable
Work Environment (X2)	11	0,755	0,7	Reliable
Job Satisfaction (Z)	16	0,860	0,7	Reliable
Performance (Y)	20	0,951	0,7	Reliable

Based on the data above, it can be seen that all instruments from the four research variables are declared valid. Likewise, the reliability test shows that the research instrument is reliable or can be used as an instrument to measure variables.

Evaluation of the Measurement Model (*Outer Model*)

Reliability Test

Research indicators are said to be valid if they have an *outer loading* value> 0.6 (Chin, 1998). The processing results show that there are 2 invalid indicators, namely KL11 and LK5 with *outer loading of* 0.425 and 0.565 respectively. So that the two invalid indicators are removed from the PLS model and re-estimated.

Table 7. *Outer Loading* Indicators

Variables	Dimensions	Indicator	*Outer Loading*	Description
Overtime Work	Overtime Motivation	KL1 <- 1ML	0,856	Valid
		KL2 <- 1ML	0,852	Valid
		KL3 <- 1ML	0,831	Valid
	Overtime	KL4 <- 1WL	0,941	Valid
		KL5 <- 1WL	0,950	Valid
	Overtime Wages	KL6 <- 1UL	0,836	Valid
		KL7 <- 1UL	0,809	Valid
		KL8 <- 1UL	0,846	Valid
		KL9 <- 1UL	0,787	Valid
	Workload	KL10 <- 1BK	0,967	Valid
		KL11 <- 1BK	0,425	Invalid
Work Environment	Physical Work Environment	LK1 <- 2LKF	0,610	Valid
		LK2 <- 2LKF	0,811	Valid
		LK3 <- 2LKF	0,817	Valid
		LK4 <- 2LKF	0,830	Valid
		LK5 <- 2LKF	0,565	Invalid
		LK6 <- 2LKF	0,649	Valid
		LK7 <- 2LKF	0,625	Valid
	Non Physical Work Environment	LK8 <- 2LKNF	0,849	Valid
		LK9 <- 2LKNF	0,865	Valid

Variables	Dimensions	Indicator	*Outer Loading*	Description
		LK10 <- 2LKNF	0,822	Valid
		LK11 <- 2LKNF	0,758	Valid
Job Satisfaction	The work itself	Z1 <- 3PIS	0,831	Valid
		Z2 <- 3PIS	0,765	Valid
		Z3 <- 3PIS	0,874	Valid
		Z4 <- 3PIS	0,692	Valid
		Z5 <- 3PIS	0,677	Valid
		Z6 <- 3PIS	0,688	Valid
	Salary	Z7 <- 3GJ	0,849	Valid
		Z8 <- 3GJ	0,614	Valid
		Z9 <- 3GJ	0,836	Valid
		Z10 <- 3GJ	0,847	Valid
	Promotion	Z11 <- 3PRM	0,794	Valid
		Z12 <- 3PRM	0,857	Valid
		Z13 <- 3PRM	0,846	Valid
	Surveillance	Z14 <- 3PWS	0,824	Valid
		Z15 <- 3PWS	0,927	Valid
		Z16 <- 3PWS	0,831	Valid
Performance	Quality	KIN1 <- 4KL	0,824	Valid
		KIN2 <- 4KL	0,860	Valid
		KIN3 <- 4KL	0,876	Valid
		KIN4 <- 4KL	0,853	Valid
	Quantity	KIN5 <- 4KN	0,820	Valid
		KIN6 <- 4KN	0,843	Valid
		KIN7 <- 4KN	0,634	Valid
		KIN8 <- 4KN	0,825	Valid
	Timeliness	KIN9 <- 4KW	0,891	Valid
		KIN10 <- 4KW	0,892	Valid
		KIN11 <- 4KW	0,810	Valid
		KIN12 <- 4KW	0,818	Valid
	Innovation	KIN13 <- 4IN	0,847	Valid
		KIN14 <- 4IN	0,878	Valid
		KIN15 <- 4IN	0,874	Valid
		KIN16 <- 4IN	0,869	Valid
	Cooperation	KIN17 <- 4KJS	0,873	Valid
		KIN18 <- 4KJS	0,912	Valid
		KIN19 <- 4KJS	0,912	Valid
		KIN20 <- 4KJS	0,840	Valid

Table 8. *Outer Loading* Indicators (Improvement)

Variables	Dimensions	Indicator	*Outer Loading*	Description
Overtime Work	Overtime Motivation	KL1 <- 1ML	0,856	Valid
		KL2 <- 1ML	0,852	Valid
		KL3 <- 1ML	0,831	Valid
	Overtime	KL4 <- 1WL	0,941	Valid
		KL5 <- 1WL	0,950	Valid
	Overtime Wages	KL6 <- 1UL	0,836	Valid
		KL7 <- 1UL	0,809	Valid
		KL8 <- 1UL	0,846	Valid
		KL9 <- 1UL	0,787	Valid
	Workload	KL10 <- 1BK	0,967	Valid
Work Environment	Physical Work Environment	LK1 <- 2LKF	0,610	Valid
		LK2 <- 2LKF	0,811	Valid
		LK3 <- 2LKF	0,817	Valid
		LK4 <- 2LKF	0,830	Valid
		LK6 <- 2LKF	0,649	Valid
		LK7 <- 2LKF	0,625	Valid
	Non Physical Work Environment	LK8 <- 2LKNF	0,849	Valid
		LK9 <- 2LKNF	0,865	Valid
		LK10 <- 2LKNF	0,822	Valid
		LK11 <- 2LKNF	0,758	Valid
Job Satisfaction	The work itself	Z1 <- 3PIS	0,831	Valid
		Z2 <- 3PIS	0,765	Valid
		Z3 <- 3PIS	0,874	Valid
		Z4 <- 3PIS	0,692	Valid
		Z5 <- 3PIS	0,677	Valid
		Z6 <- 3PIS	0,688	Valid
	Salary	Z7 <- 3GJ	0,849	Valid
		Z8 <- 3GJ	0,614	Valid
		Z9 <- 3GJ	0,836	Valid
		Z10 <- 3GJ	0,847	Valid
	Promotion	Z11 <- 3PRM	0,794	Valid
		Z12 <- 3PRM	0,857	Valid
		Z13 <- 3PRM	0,846	Valid
	Surveillance	Z14 <- 3PWS	0,824	Valid
		Z15 <- 3PWS	0,927	Valid
		Z16 <- 3PWS	0,831	Valid
Performance	Quality	KIN1 <- 4KL	0,824	Valid
		KIN2 <- 4KL	0,860	Valid
		KIN3 <- 4KL	0,876	Valid
		KIN4 <- 4KL	0,853	Valid
	Quantity	KIN5 <- 4KN	0,820	Valid

Variables	Dimensions	Indicator	*Outer Loading*	Description
		KIN6 <- 4KN	0,843	Valid
		KIN7 <- 4KN	0,634	Valid
		KIN8 <- 4KN	0,825	Valid
	Timeliness	KIN9 <- 4KW	0,891	Valid
		KIN10 <- 4KW	0,892	Valid
		KIN11 <- 4KW	0,810	Valid
		KIN12 <- 4KW	0,818	Valid
	Innovation	KIN13 <- 4IN	0,847	Valid
		KIN14 <- 4IN	0,878	Valid
		KIN15 <- 4IN	0,874	Valid
		KIN16 <- 4IN	0,869	Valid
	Cooperation	KIN17 <- 4KJS	0,873	Valid
		KIN18 <- 4KJS	0,912	Valid
		KIN19 <- 4KJS	0,912	Valid
		KIN20 <- 4KJS	0,840	Valid

The PLS model re-estimation results show that all indicators or measurement items are valid to measure each measurement dimension.

Reliability Test

Table 9. Variable Reliability Level

Variables	Cronbach's Alpha	rho_a	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Overtime Work	0,863	0,871	0,837	Reliable
Work Environment	0,867	0,873	0,867	Reliable
Job Satisfaction	0,891	0,895	0,843	Reliable
Performance	0,956	0,959	0,943	Reliable

The reliability level of all research variables shows satisfactory results where the *Cronbach's alpha*, ***rho a*** and *composite reliability* values are above (0.70) (Hair et al., 2021).

Convergent Validity Test

Table 10. Average Variance Extracted Variable

Variables	Average Variance Extracted (AVE)
Overtime Work	0,566
Work Environment	0,766
Job Satisfaction	0,575
Performance	0,768

Furthermore, the level of convergent validity of the variable level with AVE where the recommended value is above 0.50 (Hair et al., 2017). Based on the processing of the AVE value, all research variables are above 0.50, which indicates acceptable convergent validity.

Discriminant Validity Test

This measure is a measure that shows that a latent variable is different from other constructs or variables in theory and is proven empirically through statistical testing (Yamin, 2023).

Table 11. Fornell Lacker Variable

Variables	Job Satisfaction	Overtime Work	Performance	Work Environment
Job Satisfaction	**0,759**			
Overtime Work	0,637	**0,752**		
Performance	0,676	0,421	**0,876**	
Work Environment	0,694	0,564	0,585	**0,875**

Notes: Diagonal value is the root of AVE, Other values Correlation

The Fornell and Lacker criteria are variable-level discriminant validity evaluations, namely that a variable has good discriminant validity if the root AVE of that variable is greater than its correlation with other variables (Hair et al., 2017). Overall, the evaluation results show that the discriminant validity evaluation is accepted.

Table 12. HTMT Variable

Variables	Job Satisfaction	Overtime Work	Performance	Work Environment
Job Satisfaction				
Overtime Work	0,716			
Performance	0,721	0,462		
Work Environment	0,774	0,650	0,627	

The second evaluation of discriminant validity was introduced by Henseler and Sarstedt (2014), namely HTMT (Heterotrait Monotrait Ratio) with a recommended value below 0.85 or below 0.90. According to Hair et al., 2017, if HTMT is less than 0.90, the discriminant validity evaluation is accepted. The estimation results show that all pairs of variables have HTMT less than 0.90, so the variable-level discriminant validity evaluation is accepted.

Structural Model Evaluation (Inner Model)

Multicollinearity Test

Based on the processing of the inner VIF (*Variance Inflated Factor*) value of less than 5, the multicollinearity between variables is low (negligible). These results indicate that the resulting parameter estimates are acceptable / unbiased. The

correlation between overtime work and work environment in influencing job satisfaction and performance is low so there is no high multicollinearity.

Table 13. Inner VIF

	VIF
Overtime Work -> Performance	1,768
Work Environment -> Performance	2,029
Job Satisfaction -> Performance	2,327

Hypothesis Testing

Hypothesis testing is carried out to determine the effect of variables directly or indirectly or mediation along with its significance.

Table 14. Direct Effect Hypothesis Testing

Hypothesis	Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statistics (|O/STDEV|)	P values	Description
H1	Overtime Work -> Performance	-0,065	-0,064	0,105	0,618	0,537	Negative and Not Significant
H2	Work Environment -> Performance	0,239	0,237	0,081	2,962	0,003	Positive And Significant
H5	Job Satisfaction -> Performance	0,551	0,554	0,090	6,118	0,000	Positive and Significant

Based on the results of *direct* testing (*direct effect*) the effect between variables can be explained as follows.

1. H1 is rejected. This is based on the results of calculations where the *path coefficient / Original Sample* (O) value of -0.065 (negative) has no effect, and is not significant which is characterized by a statistical t value of 0.618 < 1.96 (t table), p value 0.537 > 0.05.
2. H2 is declared accepted. This is based on the results of calculations where the *path coefficient / Original Sample* (O) value is 0.239 (positive), and significant which is characterized by a statistical t value of 2.962> 1.96 (t table), p value 0.003 <0.05.
3. H5 is declared accepted. This is based on the results of calculations where the *path coefficient / Original Sample* (O) value is 0.551 (positive), and significant which is characterized by a statistical t value of 6.118> 1.96 (t table), a p value of 0.000 <0.05.

Table 15. Testing the Mediation Hypothesis

Hypothesis	Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statistics (|O/STDEV|)	P values	Description
H3	Overtime -> Job Satisfaction -> Performance	0,198	0,200	0,047	4,252	0,000	Positive and Significant
H4	Work Environment -> Job Satisfaction -> Performance	0,271	0,274	0,057	4,778	0,000	Positive and Significant

Based on the results of indirect testing (mediation) the effect between variables can be explained as follows.

1. H3 is declared accepted. This is based on the results of calculations where the *path coefficient / Original Sample* (O) value is 0.198 (positive), and significant, which is characterized by a statistical t value of 4.252> 1.96 (t table), a p value of 0.000 <0.05. Because overtime work has no significant direct effect on performance in the first hypothesis (H1), the mediating effect of job satisfaction includes *full* mediation.
2. H4 is declared accepted. This is based on the results of calculations where the *path coefficient / Original Sample* (O) value is 0.271 (positive), and significant, which is characterized by a statistical t value of 4.778> 1.96 (t table), a p value of 0.000 <0.05. Because the work environment has a significant direct effect on performance in the third hypothesis (H4), the mediating effect of job satisfaction includes *partial* mediation.

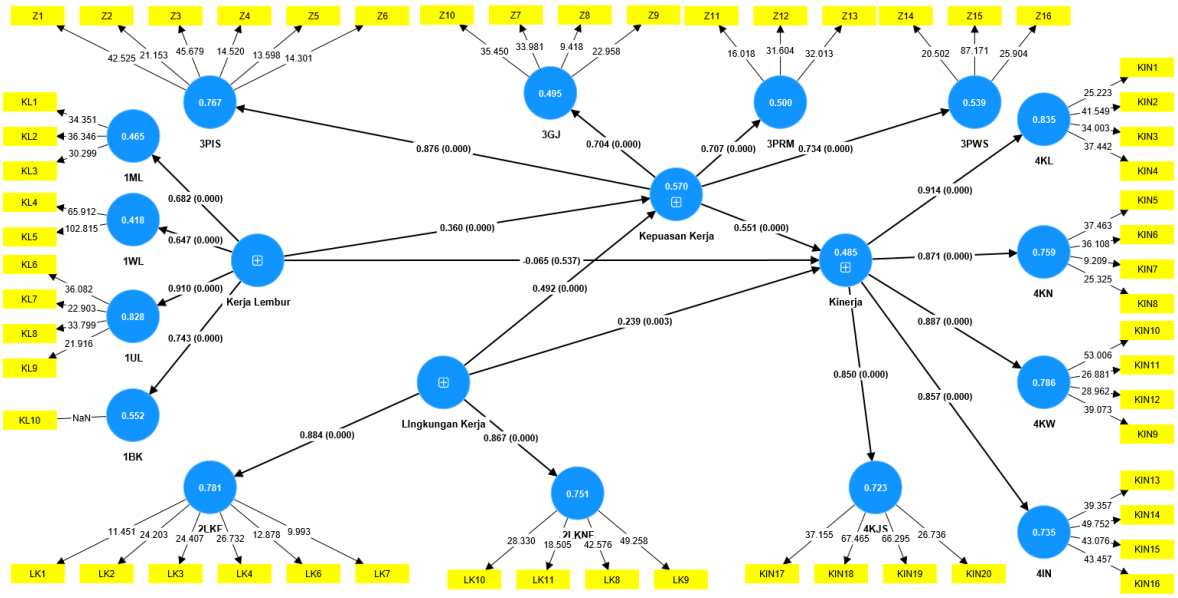


Figure 5. Diagram of *P Value* Hypothesis Testing

F Square

Furthermore, to see the effect of variables at the structural level, the effect size f square or f square can be used where the f square value can be interpreted as

low influence (f square = 0.02), moderate influence (f square = 0.15), and high influence (f square = 0.35) (Hair et al., 2021).

Table 16. F Square

	f-square	Rating
Overtime Work -> Performance	0,005	Very Low
Work Environment -> Performance	0,055	Low
Job Satisfaction -> Performance	0,254	Moderate

R Square

The size of the r square statistic illustrates the amount of variation in endogenous variables that can be explained by other exogenous / endogenous variables in the model. According to (Chin, 1998), the qualitative interpretation value of r square is 0.19 (low influence), 0.33 (moderate influence), and 0.66 (high influence). Based on the processing results above, it can be said that the magnitude of the influence of Overtime Work (X1) and Work Environment (X2) on Job Satisfaction (Z) is 57% (moderate influence). The magnitude of the influence of Overtime Work (X1), Work Environment (X2) and Job Satisfaction (Z) on Performance (Y) is 48.5% (moderate influence).

Table 17. R Square

	R-square	Adjusted R-square
Job Satisfaction	0,570	0,567
Performance	0,485	0,479

Q Square

Q square describes a measure of predictive accuracy, namely how well each change in exogenous / endogenous variables is able to predict endogenous variables. This measure is a form of validity in PLS to state the suitability of model predictions (*predictive relevance*) (Hair et al., 2017). The q square value of the Job Satisfaction (Z) and Performance (Y) variables above 0 states that the model has *predictive relevance*. The accuracy of this PLS model is met.

Table 18. Q Square

	SSO	SSE	Q^2 (=1-SSE/SSO)
Job Satisfaction	3792	2991	0,211
Performance	4740	3493	0,263

PLS Predict

PLS predicts where (Hair et al., 2019) states that PLS is an SEM analysis with predictive purposes. Therefore, it is necessary to develop a measure of model validation to show how good the predictive power of the model it proposes (Shmueli et al., 2016). The PLS model is said to have high predictive power if the RMSE (*Root Mean Squared Error*) or MAE (*Mean Absolute Error*) measure of the

PLS model is lower than the linear regression model (Hair et al., 2019). The evaluation results show that most indicators of the Job Satisfaction (Z) and Performance (Y) variables have lower RMSE and MAE values than the LM (linear regression) model, so the proposed PLS model has high predictive power. The difference value between the RMSE and MAE of the PLS and LM models is negative, which indicates that the RMSE and MAE values of the PLS model are lower than the LM model. The results of this test indicate that the proposed PLS-SEM model has ***high predictive*** power. Validation of the PLS-SEM model having high predictive power is fulfilled.

Table 19. PLS Predict

Indicator	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE	Difference between PLS and LM models	
						RMSE	MAE
Z1	0,337	0,593	0,409	0,603	0,424	-0,011	-0,016
Z2	0,156	0,766	0,573	0,766	0,567	0,000	0,007
Z3	0,338	0,539	0,385	0,561	0,402	-0,022	-0,017
Z4	0,135	0,766	0,560	0,801	0,586	-0,035	-0,026
Z5	0,222	0,544	0,438	0,546	0,419	-0,002	0,019
Z6	0,213	0,518	0,427	0,534	0,429	-0,016	-0,002
Z7	0,224	0,798	0,559	0,802	0,563	-0,004	-0,004
Z8	0,145	0,567	0,462	0,589	0,458	-0,022	0,004
Z9	0,314	0,713	0,503	0,740	0,501	-0,028	0,002
Z10	0,198	0,762	0,533	0,809	0,566	-0,047	-0,033
Z11	0,044	0,913	0,715	0,933	0,744	-0,020	-0,028
Z12	0,121	0,875	0,628	0,924	0,693	-0,049	-0,064
Z13	0,132	0,889	0,681	0,930	0,726	-0,041	-0,045
Z14	0,178	0,705	0,495	0,700	0,511	0,005	-0,016
Z15	0,321	0,558	0,390	0,537	0,390	0,020	0,000
Z16	0,230	0,602	0,405	0,610	0,424	-0,008	-0,018
KIN1	0,220	0,465	0,377	0,505	0,400	-0,039	-0,023
KIN2	0,215	0,471	0,351	0,495	0,364	-0,024	-0,013
KIN3	0,196	0,503	0,390	0,527	0,399	-0,024	-0,009
KIN4	0,226	0,508	0,423	0,529	0,427	-0,022	-0,004
KIN5	0,219	0,494	0,389	0,505	0,386	-0,011	0,003
KIN6	0,215	0,537	0,373	0,583	0,405	-0,046	-0,031
KIN7	0,034	0,737	0,591	0,797	0,639	-0,060	-0,049
KIN8	0,143	0,539	0,361	0,588	0,411	-0,049	-0,051
KIN9	0,217	0,517	0,383	0,563	0,411	-0,045	-0,028
KIN10	0,209	0,511	0,371	0,540	0,392	-0,030	-0,021
KIN11	0,141	0,625	0,438	0,631	0,470	-0,006	-0,032
KIN12	0,282	0,512	0,377	0,529	0,390	-0,016	-0,013
KIN13	0,177	0,603	0,435	0,636	0,466	-0,033	-0,031
KIN14	0,107	0,644	0,459	0,663	0,489	-0,018	-0,030
KIN15	0,156	0,627	0,465	0,653	0,498	-0,026	-0,033
KIN16	0,105	0,670	0,497	0,716	0,542	-0,046	-0,045
KIN17	0,178	0,534	0,415	0,557	0,423	-0,022	-0,008

Indicator	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE	Difference between PLS and LM models	
						RMSE	MAE
KIN18	0,127	0,566	0,417	0,584	0,435	-0,018	-0,018
KIN19	0,180	0,564	0,415	0,562	0,416	0,002	0,000
KIN20	0,220	0,585	0,416	0,584	0,411	0,001	0,006

CVPAT (*Cross-Validated Predictive Ability Test*)

CVPAT is the *Cross-Validated Predictive Ability Test*, which is a form of validating the predictive power of the PLS model whether the proposed PLS model has acceptable predictive power (Liengaard et al., 2021). This measure was developed as a complement to PLS predict. PLS-SEM requires a measure of overall model validity for the PLS-SEM flow as a predictive flow SEM. CVPAT is calculated by comparing the predictive power of the PLS model with the linear regression model (LM). The model has a high prediction if the prediction error shown by the *average loss difference* is negative and statistically significant (Sharma, 2023).

The calculation results show that the *average loss difference* value is negative and the p value <0.05, so the PLS model prediction error is lower than the LM model. Lower prediction error means that the predictive power of the PLS model is higher than the LM model. Validation of the PLS model having high predictive power is fulfilled.

Table 20. CVPAT

	Average Loss Difference	t value	p value
Job Satisfaction	-0,027	2,366	0,019
Performance	-0,031	2,998	0,003

CONCLUSION

Based on the results of the research data processing analysis, the results show that overtime work has no direct influence on performance so that this is a consideration for companies to reduce overtime work. On the other hand, the top priority that must be maintained and even improved is job satisfaction because it has a positive and largest *path coefficient* value on performance. Then the work environment is the second priority that must be of concern to the company.

It is interesting to find in this study that job satisfaction provides a *full* mediation effect (*full mediation*) of overtime work on performance so that it can change the effect of overtime work on performance to be positive and significant. In other words, employees are happy and satisfied working in the company even though intensive overtime work can still improve performance. Job satisfaction also provides a *partial mediation* effect so that the work environment consistently has a positive and significant effect on performance.

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