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Analysis of The Effect of Workload and Work Environment on Employee Satisfaction and Performance PT XYZ Using SEM

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Abstract: :This study aims to determine whether there is an influence between workload and work environment on employee satisfaction and performance at PT XYZ. The sample of this study was 122 employees who were directly involved in operations. and the method applied was SEM. The results of this study are that workload and work environment significantly influence employees' job satisfaction. workload and work environment have a significant effect on employee performance. Furthermore, employee satisfaction has a notable effect on employee performance. For further research, it is recommended to expand the variables studied.

Keyword: Workload, Work Environment, Employee Satisfaction, Employee Performance, SEM.

INTRODUCTION

The mining sector has a strategic role in the Indonesian economy and is one of the drivers of economic growth. Based on data from the Central Statistics Agency (BPS), this sector recorded a growth of 4.90% in 2024. So the Company needs to optimize work efficiency and effectiveness in order to remain competitive. A company's achievements are influenced by its workforce. One of the companies in this sector is PT XYZ which is engaged in nickel mineral mining. PT XYZ experienced a decline in productivity where in 2024 the number of results achieved was only 1,424,906 MT with an annual production target of 2,000,000 MT. One of the factors is the high frequency of overtime carried out by employees. During 2024, the average excess working hours (overtime) reached 6.92 hours per day for a month, namely in May. This can cause fatigue which has an impact on low levels of job satisfaction and decreased employee performance.

Moreover, an additional element that can influence employee satisfaction and performance is the work environment. Employees at PT XYZ typically represent a range of cultural backgrounds and levels of education. These distinctions frequently lead to disagreements in communication methods, approaches to tasks, and the values embraced by each person. This creates unique obstacles in fostering a supportive workplace. Employee job satisfaction refers to how employees feel either positively or negatively about their jobs. When

individuals are unhappy in their work it can lead to higher turnover rates and greater absenteeism, as well as contribute to workplace accidents and a deterioration in the physical and mental well-being of the workforce (Sapar, 2022). According to Herzberg's two-factor theory from 1959, there are several distinctions between job satisfaction and job dissatisfaction. Satisfaction comes from motivational elements present at work, while the absence of these elements leads to dissatisfaction (Dorta-Afonso et al., 2023).

Performance refers to the work outcomes attained by employees that can be clearly seen in the results they generate, regarding both the amount and the standard of their output (Setyo Widodo & Yandi, 2022). There is no alternative method to attain competitiveness and enhance organizational effectiveness apart from individual work performance. This has always been a primary interest for every manager, especially those in human resources. There is no one-size-fits-all answer to improve both organizational and individual performance. The issues are interconnected, making it incorrect to concentrate solely on a single solution. Performance is the result of numerous other elements, including job satisfaction, involvement, dedication, interpersonal relationships, treatment, knowledge, abilities, and confidence in oneself. By addressing these elements, it is anticipated that employees will perform their tasks more effectively (Abun et al., 2021).

Suci mentioned that workload refers to a significant volume of tasks that need to be completed, which can include extended hours, substantial pressure at work, or a heavy burden of responsibilities related to the tasks assigned (Rochman & Ichsan, 2021). If workload is below the standard, it may lead to a sense of laziness and allow the employee to become inactive, engaging in unproductive behaviors such as workplace gossip, which can negatively affect performance. Conversely, when the workload exceeds what is considered standard, the employee may feel overwhelmed, leading to risks such as exhaustion and emotional distress, which can result in dissatisfaction and may drive the employee to leave for easier job opportunities if they are available (Herawati et al., 2023). The work environment can influence how well employees perform since individuals are more likely to effectively complete their tasks and reach the best outcomes when the surroundings are suitable. Conditions are considered favorable or suitable when people can perform their tasks in a way that is effective, healthy, secure, and pleasant (Sutaguna et al., 2023).

With the problems and descriptions above, a study was carried out to determine the factors that impact employee satisfaction and performance, utilizing Structural Equation Modeling (SEM) with the assistance of AMOS software. SEM comprises a set of statistical methods that enable the simultaneous examination of a relatively intricate array of connections. This intricate relationship can be understood as a network of links formed between one or multiple endogenous variables and one or more exogenous variables, with these variables represented as factors or constructs derived from several observed or measured indicators (Sigalingging & Permatasari, 2021). This approach features particular instances of numerous recognized traditional methods, such as basic linear models and general factor analysis (Akbar et al., 2024).

METHOD

This study represents a form of quantitative research carried out in April 2025 by distributing questionnaires using google form. aimed at the employees of PT XYZ. The population is all employees at PT XYZ totaling 173 employees. For this investigation, the researcher utilized non-probability sampling with purposive sampling, which means samples were selected based on specific factors. The selection criteria for participants include all employees actively engaged in the operations at PT XYZ. According to the established criteria, the total number of eligible samples is 122. The software employed for this analysis is AMOS 23.

RESULTS AND DISCUSSION

Measurement Model

At the test stage goodness of fit Assessment of the model's appropriateness is conducted by contrasting the outcomes of the model evaluation with the critical values of various criteria goodness of fit and cut off value.

Table 1 Goodness of Fit and Cut off Value

Criteria	Model Test Results	Critical Value	Information
X^2 *Chi-Square*	73.257	Small, X^2 with df = 38 with $\alpha = 0.05$	Not Good
Probability	0.001	≥ 0.05	Not Good
CMIN/DF	1.928	≤ 2.00	Good
RMSEA	0.088	≤ 0.08	Good
GFI	0.906	≥ 0.90	Marginal
AGFI	0.837	≥ 0.90	Not Good
TLI	0.934	≥ 0.95	Not Good
CFI	0.955	≥ 0.95	Good

In the table 4.1 it is evident that when comparing the outcomes of the model test to its critical value. there are three criteria that are not good and good and one criterion that is marginal. The depiction of the measurement model is illustrated in figure 4.1 below.

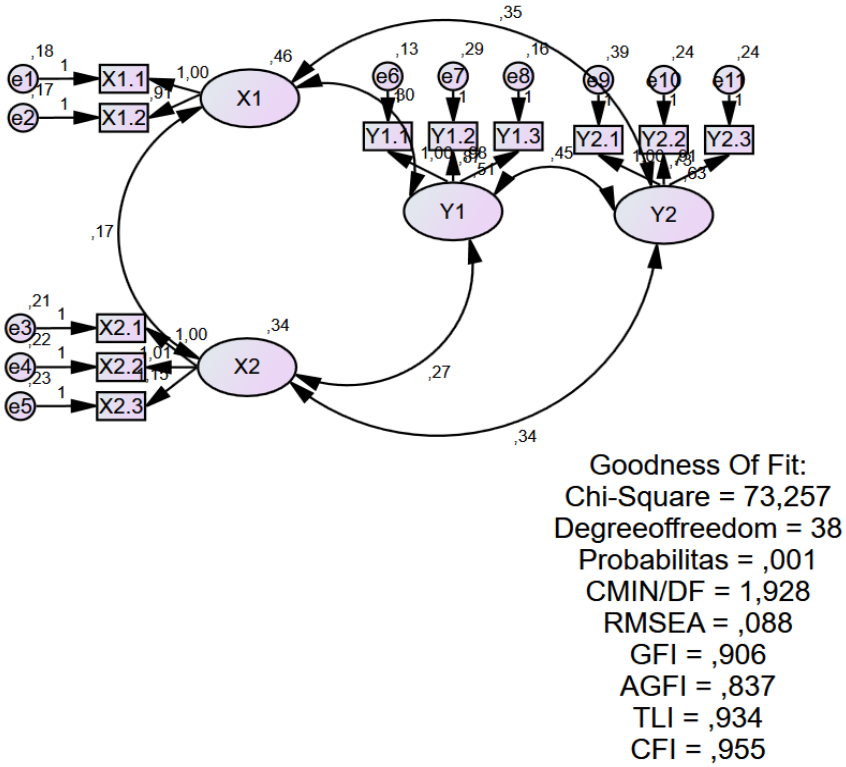

Figure 1 Measurement Model

In the validity examination, the measurement model created during the study is evaluated by checking if each estimated indicator effectively measures the aspects of the same concept. An indicator is considered valid for the model if its critical ratio (C.R) exceeds twice the standard error (C.R > 2.SE), According to table 2, all indicators have a C.R value > 2.SE, then it can be concluded that all indicators are valid. C.R (critical Ratio) identical to t-count in regression analysis, therefore CR must be compared with t-table. If the CR exceeds the t-table

value (t-count > t-table), the variable is deemed significantly representative of the latent variable. Table 2 shows that latent variables can be evaluated using the t-test applied to regression weights. With a significance level of 0.05 and degrees of freedom of 11 (the total of all indicators), a t-value of 1.796 is obtained, confirming that all indicators are significant.

Table 2 Estimate Standarized Regression Weights

	Estimate	S.E.	2.S.E.	C.R.	Capt.Valid	P	Capt. Significant	Estimation Standardized Regression Weight
X1.1 <--- X1	1.000							0.850
X1.2 <--- X1	0.914	0.121	0.242	7.532	Valid	***	Significant	0.836
X2.1 <--- X2	1.000							0.788
X2.2 <--- X2	1.014	0.126	0.252	8.062	Valid	***	Significant	0.783
X2.3 <--- X2	1.148	0.136	0.272	8.454	Valid	***	Significant	0.812
Y1.1 <--- Y1	1.000						Significant	0.895
Y1.2 <--- Y1	0.874	0.088	0.176	9.939	Valid	***	Significant	0.756
Y1.3 <--- Y1	0.978	0.076	0.152	12.864	Valid	***	Significant	0.869
Y2.1 <--- Y2	1.000						Significant	0.787
Y2.2 <--- Y2	0.728	0.084	0.168	8.657	Valid	***	Significant	0.760
Y2.3 <--- Y2	0.907	0.097	0.194	9.333	Valid	***	Significant	0.828

The purpose of the correlation test is to determine if a relationship exists between two different variables. Table 3 displays that the correlation coefficient (r) found between the variables is positive and close to 1, indicating that all effects among the variables are significant and aligned in the same direction.

Table 3 Correlation Test

	Estimate
X1 <--> X2	0.421
X1 <--> Y1	0.608
X1 <--> Y2	0.644
X2 <--> Y1	0.641
X2 <--> Y2	0.738
Y1 <--> Y2	0.796

Structural Model

Table 4 Goodness of Fit and Cut off Value Structural Model

Criteria	Model Test Results	Critical Value	Information
X^2 *Chi-Square*	88,447	Small, X^2 with df = 39 with $\alpha = 0{,}05$	Not Good
Probability	0.000	≥ 0.05	Not Good
CMIN/DF	2.268	≤ 2.00	Not Good
RMSEA	0.102	≤ 0.08	Not Good
GFI	0.890	≥ 0.90	Marginal
AGFI	0.813	≥ 0.90	Not Good
TLI	0.910	≥ 0.95	Not Good
CFI	0.934	≥ 0.95	Marginal

In table 4 above, it can be seen that from the results of the model test compared to its critical value, there are six bad criteria and two marginal criteria. For the image structural model can be seen in figure 2 below.

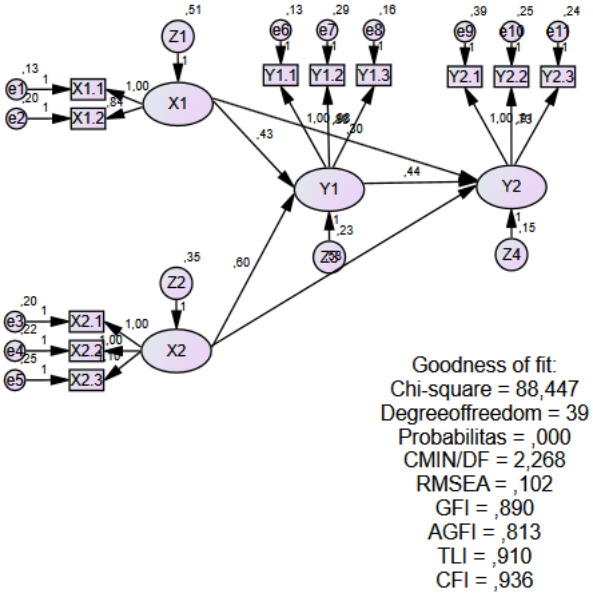

Figure 2 Structural Model

In the goodness of fit test there are still values that are not good. making it essential to adjust the model. This adjustment is carried out by examining modification indices, which may involve covariance or regression weight, beginning with the highest value.

Modification Model

Table 5 Goodness of Fit and Cut off Value Modification Model

Criteria	Model Test Results	Critical Value	Information
X^2 *Chi-Square*	49.566	Small, X^2 with df = 36 with $\alpha = 0{,}05$	Good
Probability	0.066	≥ 0.05	Good
CMIN/DF	1.377	≤ 2.00	Good
RMSEA	0.056	≤ 0.08	Good
GFI	0.938	≥ 0.90	Good
AGFI	0.886	≥ 0.90	Marginal
TLI	0.973	≥ 0.95	Good
CFI	0.983	≥ 0.95	Good

In table 5 it can be seen that from the results of the model test compared to its critical value there are seven good criteria and one marginal criterion. The image of the modification model can be seen in figure 3 below.

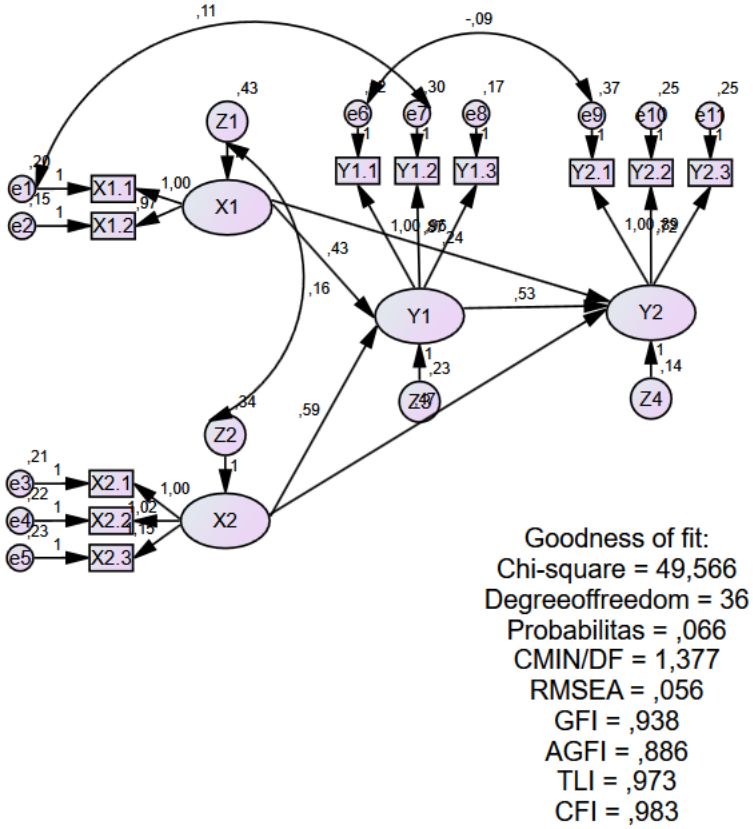

Figure 3 Modification Model

In the validity examination, the measurement model created during the study is evaluated by checking if each estimated indicator effectively measures the aspects of the same concept. An indicator is considered valid for the model if its critical ratio (C.R) exceeds twice the standard error (C.R > 2.SE), According to table 4.6, all indicators have a C.R value > 2.SE, then it can be concluded that all indicators are valid. C.R (critical Ratio) identical to t-count in regression analysis, therefore CR must be compared with t-table. If the CR exceeds the t-table value (t-count > t-table), the variable is deemed significantly representative of the latent variable. Table 4.6 shows that latent variables can be evaluated using the t-test applied to regression weights. With a significance level of 0.05 and degrees of freedom of 11 (the total of all indicators), a t-value of 1.796 is obtained, confirming that all indicators are significant.

Table 4.6 Estimate Standarized Regression Weights Modification Model

	Estimate	**S.E.**	**2.S.E.**	**C.R.**	**Capt.Valid**	**P**	**capt. Significant**	***Estimation Standardized Regression Weight***
Y1 <--- X1	0.429	0.103	0.206	4.148	Valid	***	Significant	0.394
Y1 <--- X2	0.593	0.119	0.238	4.984	Valid	***	Significant	0.483
Y2 <--- X2	0.475	0.148	0.296	3.200	Valid	.001	Significant	0.348
Y2 <--- X1	0.242	0.116	0.232	2.080	Valid	.038	Significant	0.2
Y2 <--- Y1	0.529	0.14	0.28	3.769	Valid	***	Significant	0.477
X1.1 <--- X1	1.000			.			Significant	0.827
X1.2 <--- X1	0.971	0.131	0.262	7.425	Valid	***	Significant	0.858
X2.1 <--- X2	1.000						Significant	0.788
X2.2 <--- X2	1.016	0.126	0.252	8.093	Valid	***	Significant	0.784
X2.3 <--- X2	1.148	0.135	0.27	8.488	Valid	***	Significant	0.812

	Estimate	S.E.	2.S.E.	C.R.	Capt.Valid	P	capt. Significant	*Estimation Standardized Regression Weight*
Y1.1 <--- Y1	1.000							0.904
Y1.2 <--- Y1	0.874	0.086	0.172	10.197	Valid	***	Significant	0.755
Y1.3 <--- Y1	0.962	0.075	0.15	12.812	Valid	***	Significant	0.859
Y2.1 <--- Y2	1.000						Significant	0.794
Y2.2 <--- Y2	0.721	0.083	0.166	8.657	Valid	***	Significant	0.753

The model that has been tested for its fit must then be subjected to a construct reliability test. It is considered reliable if the construct reliability value for each variable is ≥ 0.70.

Table 7 Reliability Test Modification Model

Variabels	Workload		Work Environment		Employee Satisfaction		Employee Performance	
Indicator	Construct	error	Construct	error	Construct	error	Construct	error
X1.1	0.827	0.173						
X1.2	0.858	0.142						
X2.1			0.788	0.212				
X2.2			0.784	0.216				
X2.3			0.812	0.188				
Y1.1					0.904	0.096		
Y1.2					0.755	0.245		
Y1.3					0.859	0.141		
Y2.1							0.794	0.206
Y2.2							0.753	0.247
Y2.3							0.817	0.183
Σ Std. Error	1.685		2.384		2.518		2.364	
Σ Error		0.315		0.616		0.482		0.636
Reability Construct	0.900133947		0.902213778		0.929349588		0.897823053	
Information	Reliable		Reliable		Reliable		Reliable	

Simultaneous Equations

The simultaneous equations are described as follows:

Model 1

$Y1 = f(X1) + f(X2) + Z3$

$Y1 = 0.394\ X1 + 0.483\ X2 + Z3$

Model 2

$Y2 = ff\ (Y1) + (X1) + f(X2) + Z4$

$Y2 = 0.477(0.394\ X1 + 0.483\ X2) + 0.200\ X1 + 0.348\ X2 + Z4$

$Y2 = (0.188\ X1 + 0.230\ X2) + 0.200\ X1 + 0.348\ X2 + Z4$

$Y2 = 0.388\ X1 + 0.578\ X2 + Z4$

The effect of workload on employee job satisfaction

The outcomes of the hypothesis evaluation are displayed in table 4.6. the effect of workload on employee job satisfaction has a C.R value of 4.148 and a t-table of 1.796 (t-count > t-table). Therefore, it can be concluded that workload significantly impacts employee job satisfaction. Furthermore, the influence of workload on employee job satisfaction has a regression coefficient of 0.394, indicating that both factors significantly affect each other. The findings of this research align with research conducted by (Indra, 2022), (Hammar, 2023),

(Andinni & Harun, 2024) and (Astuti, 2022) which indicate that workload has a significant effect on employee job satisfaction.

The effect of the work environment on employee job satisfaction

The outcomes of the hypothesis evaluation are displayed in table 4.6. the effect of work environment on employee job satisfaction has a C.R value of 4.984 and a t-table of 1.796 (t-count > t-table). Therefore, it can be concluded that workload significantly impacts employee job satisfaction. Furthermore, the influence of work environment on employee job satisfaction has a regression coefficient of 0.483, indicating that both factors significantly affect each other. The findings of this research align with research conducted by (Hakim et al., 2023) and (Waworundeng et al., 2021) which indicate that work environment has a significant effect on employee job satisfaction.

The effect of workload on employee performance

The outcomes of the hypothesis evaluation are displayed in table 4.6. the effect of workload on employee performance has a C.R value of 2.080 and a t-table of 1.796 (t-count > t-table). Therefore, it can be concluded that workload significantly impacts employee performance. Furthermore, the influence of workload on employee performance has a regression coefficient of 0.200, indicating that both factors significantly affect each other. The findings of this research align with research conducted by (Aisyah et al., 2023) dan (Yuliantini & Suryatiningsih, 2021) which indicate that workload has a significant effect on employee performance.

The effect of the work environment on employee performance

The outcomes of the hypothesis evaluation are displayed in table 4.6. the effect of work environment on employee performance has a C.R value of 3.200 and a t-table of 1.796 (t-count > t-table). Therefore, it can be concluded that workload significantly impacts employee performance. Furthermore, the influence of work environment on employee performance has a regression coefficient of 0.348, indicating that both factors significantly affect each other. The findings of this research align with research conducted by (Sitepu et al., 2020), (Susanti & Mardika, 2021) and (Ambarita & Yuliani, 2022). which indicate that work environment has a significant effect on employee performance.

The effect of employee job satisfaction on employee performance

The outcomes of the hypothesis evaluation are displayed in table 4.6. the effect of employee satisfaction on employee performance has a C.R value of 3.769 and a t-table of 1.796 (t-count > t-table). Therefore, it can be concluded that employee satisfaction significantly impacts employee performance. Furthermore, the influence of employee satisfaction on employee performance has a regression coefficient of 0.477, indicating that both factors significantly affect each other. The findings of this research align with research conducted by (Hammar, 2023) and (Al-Muhtadi & Sumiati, 2023). which indicate that employee satisfaction has a significant effect on employee performance.

CONCLUSION

From the findings, it is evident that the factor of workload notably influences employee job satisfaction. Similarly, the work environment significantly impacts employee job satisfaction. The workload factor also plays a crucial role in employee performance. Factors related to the work environment greatly affect how employees perform. Elements that contribute to job satisfaction have a considerable effect on employee performance as well.

The results of this research can offer valuable insights for managers in organizations to effectively manage workloads by distributing tasks appropriately based on individual capabilities. This approach can lead to improved productivity without overwhelming employees. Moreover, it is essential for companies to focus on enhancing the quality of the non-physical aspects of the work environment, such as fostering a positive workplace culture and improving communication between staff and management to cultivate an encouraging and motivating workplace. Additionally, maintaining a healthy balance between job responsibilities and employees' personal lives is crucial to ensure long-term employee satisfaction and performance.

For future studies, it is suggested to broaden the range of variables being investigated. Furthermore, since this study only examines the non-physical work environment, it is anticipated that additional investigations will also look into the impact of the physical work setting. This approach could offer a deeper insight into how the complete work environment, including both physical and non-physical elements, influences employee satisfaction and performance.

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